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Zhodnocení rentability společnosti BMW AG

Assessment of Profitability of the Company BMW AG

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3. Basic Financial Characteristic of the BMW AG Company
4. Analysis of the Profitability of the BMW AG Company
5. Conclusion

Bibliography
List of Abbreviations
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"I hereby declare that I have elaborated the entire thesis including annexes myself."

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Content

1.Introduction

BMW AG is a German multinational company which currently produces automobiles and motorcycles, and also produced aircraft engines until 1945.

The company was founded in 1916 and is headquartered in Munich, Bavaria. BMW produces motor vehicles in Germany, Brazil, China, India, South Africa, the United Kingdom, and the United States. In 2015, BMW was the world's twelfth largest producer of motor vehicles, with 2,279,503 vehicles produced. This paper will take the BMW AG as research object, to access the profitability of this company.

The goal of this paper is to estimate the financial situation of BMW. We will use financial analysis; pyramid decomposition and sensitivity analysis find advantages and the disadvantage of BMW. In this article, we will focus on activity and solvency analysis. These two ratios are important for companies to assess their performance and improve their weaknesses to make the company stronger. We will analyze activity and solvency ratios to find ways to help BMW improve the efficiency of its assets and enhance its ability to meet long-term liabilities. Then we quantify the impact of each indicator on the selected key indicators. Improve the company's performance by changing the proportion of each indicator.

In chapter 2, is the description of the profitability methodology. Chapter 2 is the principle part of the four parts. It starts with three parts. The first is financial statements include balance sheets, income statements and cash flows. Second are two common size analyses: horizontal common size analysis and vertical common analysis. Third, we describe four types of financial ratios: liquidity ratio, solvency ratio, profitability and activity ratio.

In Chapter 3, we first introduced the details of BMW. The presentation includes history and headquarters, BMW's main business, overseas business, future development direction, major competitors and international status in the industry. We then created some tables and numbers and then used vertical common size analysis and horizontal common size analysis to describe and analyze the trend income statement and balance sheet.

The most important part is Chapter 4, which emphasizes financial ratios, pyramid

decomposition, and sensitivity analysis. In this chapter, we will calculate the financial ratio of activity and solvency, and at the same time as Ford, pyramid decomposition can decompose the activity and solvency ratio into each component indicator, which helps us understand which indicator affects the company. maximum. Sensitivity analysis is to identify sensitive factors, which means that small changes in some parameters can lead to large differences in the index. Sensitivity factors can provide decision-making information for companies, and if companies want to avoid risks, they can choose projects with lower sensitivity.

The final chapter is the conclusion, we will summarize these results and provide some feasible solutions for the company.

2. Description of the Profitability Methodology

In this chapter, we will introduce four parts of financial analysis, it includes financial statement, common-size analysis, financial ratio analysis, and pyramidal decomposition. Based on these important methods of financial analysis, we will focus on the profitability ratios. After that, we will use these methods to analysis the actual data of BMW company.

2.1 Financial Statement

Financial statements are formal records of the financial activities and position of a business, person, or other entity.

For large corporations, these statements may be complex and may include an extensive set of footnotes to the financial statements and management discussion and analysis. The notes typically describe each item on the balance sheet, income statement and cash flow statement in further detail.

2.1.1 Balance Sheet

The balance sheet is a snapshot of the firm. It is a convenient means of organizing and summarizing what a firm owns (its assets), what a firm owes (its liabilities), and the difference between the two (the firm's equity) at a given point in time. Figure 2.1 illustrates how the balance sheet is constructed. As shown, the left-hand side lists the assets of the firm, and the right-hand side lists the liabilities and equity.[1]

For example: If Tom's company takes out a £5,000 loan from the bank, the assets would increase by £5,000, but the liabilities would also increase by £5,000, which effectively balances the accounts. So, the formula behind the balance sheet is:

$$Assets = Liabilities + Owner's\ Equity. \tag{2.1}$$

[1] BREALEY, R. A., S. C. MYERS and A. J. MARCUS. (2012, P55)

An asset is anything of value that a company owns. This includes cash, property and equipment, inventory, accounts receivables and more. An asset is something that can be converted to cash value.

Table 2.1 An example of asset

	2017	2016
Cash & Short-Term Investments	9039	7880
Total Accounts Receivable	36346	34991
Inventories	12707	11841
Other Current Assets	13490	12152

A liability is an amount that a company owes. Typically, a liability involves money borrowed in order to support business activities, so can also include accounts payable and general debt.

In the balance sheet, the total liabilities are the total money owed, whether to a lender, bank, or supplier. In relation to the assets, it provides an idea of how stable a business is, as well as whether accounts are overdue.

Table 2.2 An example of liability

	2017	2016
Accounts Payable	9,731	8,512
Total Current Liabilities	69,047	67,989
Total Liabilities	148644	151708

Owner’s equity refers to the money that can be considered the net assets. It is the assets minus the liabilities. Any remaining value in assets can be attributed to owner’s equity.

Table 2.3 An example of equity

	2017	2016
Total Shareholders' Equity	54,852	47,715
Liabilities & Shareholders' Equity	203,496	199,423

The cost of equity is the rate of return that investors require to invest in the equity of a firm. All of the risk-and-return models described in the previous chapter need a risk-free rate and a risk

premium (in the CAPM) or premiums (in the APM and multifactor models). We begin by discussing those common inputs before turning attention to the estimation of risk parameters.[2]

2.1.2 P/L Statement

The profit and loss account show what net profit and loss your business has made within an accounting period after deducting all expenditure from the income. A net profit is earned if the total expenditure is less than the sales and a net loss if it is greater.

The profit and loss statement are considered one of the most important documents for keeping an eye on the financial health of a business. It is also sometimes referred to as the 'income statement'. For all private limited companies, the profit and loss statement are part of annual statutory accounts.

An essential objective of a business is to make a profit. The P&L statement shows the extent to which it has been successful in achieving this objective.

Companies are expected to keep their P&L statements in certain formats. Typically, the P&L statement will show the revenues received by a business and the costs involved in generating that revenue. In simple terms:

$$Net\ income = revenues - costs\ and\ expenses \qquad (2.2)$$

In addition to the profit and loss statement the balance sheet is an important financial statement for a business. The data gathered for these two reports and the resulting calculations that can be made provide useful information for the owners and managers of a business.

[2] DAMODARAN, Aswath (2010,P88).

Table 2.4 the example of P/L statement

Year	2017
Income	
Affiliates	76
Downloads	300
Courses	900
Total income	1276
Costs	36
Gross profit	1240
Expenses	
Operating	100
Marketing	10
Employee	200
Total expenses	310
Net income	930

The profit & loss report, balance sheet, and other reports illustrate how well a business is operating, whether there are any places where spending can be improved, and whether a company has been consistent in its earnings.

2.1.3 Cash Flow Statement

The cash flow statement provides information about a company's cash receipts (inflows) and cash payments (outflows) during an accounting period, showing how these cash flows link the ending cash balance to the beginning balance shown on the company's balance sheet.[3] It is one of the main financial statements analysts use in building three statement model. The main categories found in a cash flow statement are the (1) operating activities, (2) investing activities, and (3) financing activities of a company and are organized respectively. The total cash provided from or used by each of the three activities is summed to arrive at the total change in

[3] DLUHOŠOVÁ, Dana (2014,P55)

cash for the period, which is then added to the opening cash balance to arrive at the cash flow statement's bottom line, the closing cash balance.

One of the primary reasons cash inflows and outflows are observed is to compare the cash from operations to net income. This comparison helps company management, analysts, and investors to gauge how well a company is running its operations. The cash flow statement reflects the actual amount of money the company receives from its operations.

The reason for the difference between cash and profit is because the income statement is prepared under the accrual basis of accounting, where it matches revenues and expenses for the accounting period, even though revenues may actually not have yet been collected and expenses may not have yet been paid.

Table 2.5 An example of cashflow statement

	2017	2016
Net Income before Extraordinaires	8,506	6,821
Net Income Growth	0.2599	0.0804
Depreciation, Depletion & Amortization	4,822	4,806
Depreciation and Depletion	3395	3403
Deferred Taxes & Investment Tax Credit	-609	85
Other Funds	-8626	-9871
Funds from Operations	4293	1930
Changes in Working Capital	1451	1125
Net Operating Cash Flow	5744	3055

2.2 Common-Size Analysis

Common-size analysis (also called vertical analysis) converts each line of financial statement data to an easily comparable, or common-size, amount measured as a percent. This is done by stating income statement items as a percent of net sales and balance sheet items as a percent of total assets (or total liabilities and shareholders' equity). For example, Coca-Cola had net income of $11,809,000,000 and net sales of $35,119,000,000 for 2010. The common-size

percent is simply net income divided by net sales, or 33.6 percent (= $11,809 ÷ $35,119).

There are two main types: horizontal common-size analysis and vertical common-size analysis.

2.2.1 Horizontal common-size analysis

Horizontal analysis is used in financial statement analysis to compare historical data, such as ratios, or line items, over a number of accounting periods. Horizontal analysis can either use absolute comparisons or percentage comparisons, where the numbers in each succeeding period are expressed as a percentage of the amount in the baseline year, with the baseline amount being listed as 100%. This is also known as base-year analysis.

Examples of Horizontal Analysis

To illustrate horizontal analysis, let's assume that a base year is five years earlier. All of the amounts on the balance sheets and the income statements will be expressed as a percentage of the base year amounts. The amounts from five years earlier are presented as 100% or simply 100. The amounts from the most recent years will be divided by the base year amounts. For instance, if a most recent year amount was three times as large as the base year, the most recent year will be presented as 300. If the previous year's amount was twice the amount of the base year, it will be presented as 200. Seeing the horizontal analysis of every item allows you to more easily see the trends. It will be easy to detect that over the years the cost of goods sold has been increasing at a faster pace than the company's net sales. From the balance sheet's horizontal analysis, you may see that inventory and accounts payable have been growing as a percentage of total assets.

2.2.2 Vertical common-size analysis

Vertical analysis is the proportional analysis of a financial statement, where each line item on a financial statement is listed as a percentage of another item. This means that every line item on an income statement is stated as a percentage of gross sales, while every line item on a balance sheet is stated as a percentage of total assets.

The most common use of vertical analysis is within a financial statement for a single reporting period, so that one can see the relative proportions of account balances. Vertical analysis is also useful for trend analysis, to see relative changes in accounts over time, such as on a comparative basis over a five-year period. For example, if the cost of goods sold has a history of being 40% of sales in each of the past four years, then a new percentage of 48% would be a cause for alarm.

2.3 Financial ratio analysis

Financial ratios are mathematical comparisons of financial statement accounts or categories. These relationships between the financial statement accounts help investors, creditors, and internal company management understand how well a business is performing and of areas needing improvement.

Financial ratios are the most common and widespread tools used to analyze a business' financial standing. Ratios are easy to understand and simple to compute. They can also be used to compare different companies in different industries. Since a ratio is simply a mathematically comparison based on proportions, big and small companies can be use ratios to compare their financial information. In a sense, financial ratios don't take into consideration the size of a company or the industry. Ratios are just a raw computation of financial position and performance.

2.3.1 Profitability ratios

Profitability ratio is used to evaluate the company's ability to generate income as compared to its expenses and other cost associated with the generation of income during a particular period. This ratio represents the final result of the company.

Return on Equity (ROE) measures Profitability of equity fund invested the company. It also measures how profitably owner's funds have been utilized to generate company's revenues. A high ratio represents better the company is.

$$ROE = \frac{EAT}{EQUITY} \tag{2.3}$$

Return on Assets (ROA) measures the earning per rupee of assets invested in the company. A high ratio represents better the company is.

$$ROA = \frac{EBIT}{A} \tag{2.4}$$

The Net Profit Margin Ratio shows the net income earned from the sale of goods and services or simply, how much profits are generated at a certain level of sales. This ratio shows the earning, or the revenues left for the shareholders, both equity and preference shareholders, after making the payment of all the operating expenses, interest, taxes, etc.

$$NPM = \frac{EAT}{Revenues} \tag{2.5}$$

The Operating Profit Margin Ratio shows the proportion of revenues left after making the payment for the operations unrelated to the direct production of goods and services. It is also referred to as income from operations and shows the margin left after paying the overhead expenses, manufacturing expenses, selling and distribution expenses, administrative expenses, etc.

$$OPM = \frac{EIBT}{Revenues} \tag{2.6}$$

The Gross Profit Margin Ratio shows how efficiently the company has generated revenues from the sale of its inventories and merchandise. Simply, this ratio measures the amount of profit generated after meeting the direct expenses related to the production of goods and services.

$$Gross\ profit\ margin = \frac{Gross\ Profit}{Net\ sales} \tag{2.7}$$

The Return on Capital Employed Ratio measures the profits generated from each capital employed. Unlike return on equity that measures only the company's common equity, the return on capital employed is a comprehensive approach that measures the overall financial performance of the company, by taking both the equity and the liabilities into consideration.

$$Return\ on\ Capital\ Employed = \frac{Net\ Operating\ Profit}{Capital\ Emplyed} \tag{2.8}$$

2.3.2 Liquidity Ratios

Liquidity ratios analyze the ability of a company to pay off both its current liabilities as they become due as well as their long-term liabilities as they become current. In other words, these ratios show the cash levels of a company and the ability to turn other assets into cash to pay off liabilities and other current obligations.

The current ratio is a liquidity and efficiency ratio that measures a firm's ability to pay off its short-term liabilities with its current assets. The current ratio is an important measure of liquidity because short-term liabilities are due within the next year. The formula is:

$$Current\ Ratio = \frac{current\ assents}{current\ liabilities} \tag{2.9}$$

The quick ratio or acid test ratio is a liquidity ratio that measures the ability of a company to pay its current liabilities when they come due with only quick assets. Quick assets are current assets that can be converted to cash within 90 days or in the short-term. Cash, cash equivalents, short-term investments or marketable securities, and current accounts receivable are considered quick assets. The formula is:

$$Quick\ Ratio = \frac{current\ assets - inventories}{current\ liabilities} \tag{2.10}$$

The Cash Ratio shows how quickly the firm can pay off its liabilities relative to Cash, bank balances, marketable securities since these are considered as the most liquid component of the current assets. Simply, this ratio measures the ability of a firm to meet its current obligations with the cash or cash equivalents.

It is the most stringent liquidity ratio and is considered as an important decision factor for the creditors regarding how much amount is to be lent to the asking firm. The high value of cash ratio shows sufficient cash balance with the firm and is capable of paying the current debts. The formula for calculating the Cash Ratio is:

$$Cash\ Ratio = \frac{cash + marketable\ securities}{current\ liabilities} \tag{2.11}$$

2.3.3 Solvency (leverage) ratios

The solvency ratio is a key metric used to measure an enterprise's ability to meet its debt obligations and is used often by prospective business lenders. The solvency ratio indicates whether a company's cash flow is sufficient to meet its short-and long-term liabilities. The lower a company's solvency ratio, the greater the probability that it will default on its debt obligations.

The debt to equity ratio is a financial, liquidity ratio that compares a company's total debt to total equity. The debt to equity ratio shows the percentage of company financing that comes from creditors and investors. A higher debt to equity ratio indicates that more creditor financing (bank loans) is used than investor financing (shareholders). The formula is:

$$Debt\ to\ equity = \frac{total\ liabilities}{total\ equity} \tag{2.12}$$

The equity ratio is an investment leverage or solvency ratio that measures the amount of assets that are financed by owners' investments by comparing the total equity in the company to the total assets.

The equity ratio highlights two important financial concepts of a solvent and sustainable business. The first component shows how much of the total company assets are owned outright by the investors. In other words, after all of the liabilities are paid off, the investors will end up with the remaining assets.

The second component inversely shows how leveraged the company is with debt. The equity ratio measures how much of a firm's assets were financed by investors. In other words, this is the investors' stake in the company. This is what they are on the hook for. The inverse of this calculation shows the amount of assets that were financed by debt. Companies with higher equity ratios show new investors and creditors that investors believe in the company and are willing to finance it with their investments. The formula is:

$$Equity\ ratio = \frac{total\ equity}{total\ assets} \tag{2.13}$$

Debt ratio is a solvency ratio that measures a firm's total liabilities as a percentage of its total

assets. In a sense, the debt ratio shows a company's ability to pay off its liabilities with its assets. In other words, this shows how many assets the company must sell in order to pay off all of its liabilities.

This ratio measures the financial leverage of a company. Companies with higher levels of liabilities compared with assets are considered highly leveraged and more risky for lenders.

This helps investors and creditors analysis the overall debt burden on the company as well as the firm's ability to pay off the debt in future, uncertain economic times. The formula is:

$$Debt\ ratio = \frac{total\ Debt}{Total\ assets} \tag{2.14}$$

Operating leverage ratio measures the ratio of a business' contribution margin to its net operating income. It evaluates how much a business' income changes relative to changes in sales. It's calculated using the following formula:

$$Operating\ Leverage\ Ratio\ = \frac{\%\ change\ in\ EBIT}{\%\ change\ in\ sales} \tag{2.15}$$

2.3.4 Activity ratios

Activity ratios are a category of financial ratios that measure a firm's ability to convert different accounts within its balance sheets into cash or sales. Activity ratios measure the relative efficiency of a firm based on its use of its assets, leverage, or other similar balance sheet items and are important in determining whether a company's management is doing a good enough job of generating revenues and cash from its resources.

A ratio that measures the assets activity and firm's ability of generating sales through its assets is total asset turnover. To compute it the net sales have to be divided by average total assets:

$$Total\ Assets\ Turnover = \frac{Revenues}{Total\ Assets} \tag{2.16}$$

It is obvious, that the higher this ratio, the better it is for a firm because this means it can generate more sales with some certain level of assets. Total asset turnover ratio can be compared with other similar-sized companies within the industry; the comparison with different industries

businesses or noticeably smaller or greater firms wouldn't be adequate.

Similar to total asset turnover is current asset turnover ratio. The difference is that current asset turnover is measuring firm's ability of sales generation from its current assets, such as cash, inventory, accounts receivable, etc.:

$$Current\ Assets\ Turnover = \frac{Revenues}{Average\ Current\ Assets} \tag{2.17}$$

Bigger values for these ratios are preferable because this means the ability of generating more sales from some certain amount of current assets.

There is a measure of the number of times inventory is sold or used in a time period such as a year:

$$Inventory\ Turnover = \frac{costs\ of\ goods\ sold}{average\ inventory} \tag{2.18}$$

Average collection period ratio measures the conversion of accounts receivable into cash:

$$Average\ collection\ period = \frac{Accounts\ receivable}{revenues} \cdot 360 \tag{2.19}$$

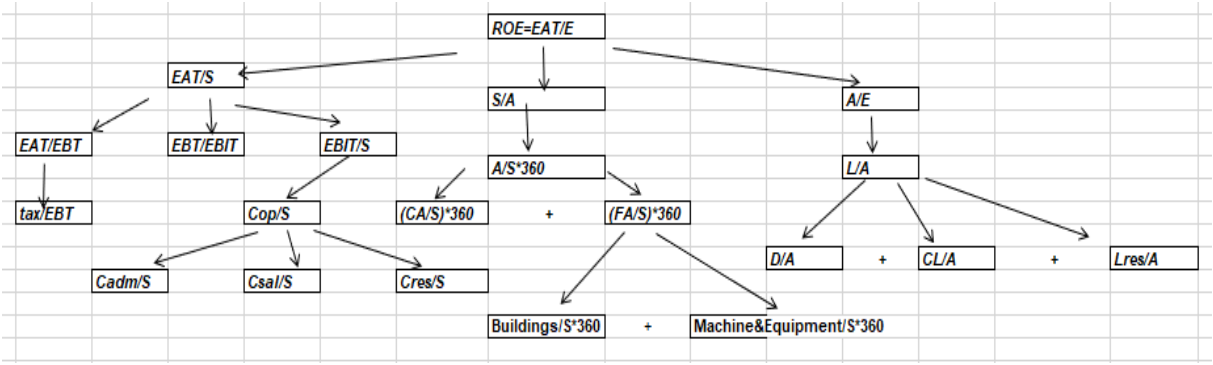
2.4 Dupont analysis

The DuPont analysis (also known as the DuPont identity or DuPont model) is a framework for analyzing fundamental performance popularized by the DuPont Corporation. DuPont analysis is a useful technique used to decompose the different drivers of return on equity (ROE). Decomposition of ROE allows investors to focus on the key metrics of financial performance individually to identify strengths and weaknesses.

There are three major financial metrics that drive return on equity (ROE): operating efficiency, asset use efficiency and financial leverage. Operating efficiency is represented by net profit margin or net income divided by total sales or revenue. Asset use efficiency is measured by the asset turnover ratio. Leverage is measured by the equity multiplier, which is equal to average assets divided by average equity.

$$ROE = \frac{EAT}{Equity} = \frac{EAT}{Revenue} \cdot \frac{Revenue}{Assets} \cdot \frac{Assets}{Equity} \tag{2.20}$$

Figure 2.1 Pyramidal Decomposition of Return on Equity



Value of total assets and shareholders' equity can be found in the balance sheet, net sales and net income can be found in the income statement, and preferred dividends can be found in the notes to the financial statements.

DuPont analysis is an excellent technique to determine the strengths and weaknesses of a company. Each weak financial ratio used in the model can be decomposed to get deeper insight into the source of weakness. When sources of weakness are identified, management can take some actions (e.g., improve expense control, asset management, or marketing) to improve the return on equity ratio.

There are five methods for quantification of influence.

2.4.1 Methods of gradual changes

Methods of gradual changes works with absolute changes in component ratios. The advantage of this method is can be applied regardless of positive or negative values in component ratio or basic ratio. The disadvantage is the order in decomposition can influence the results. In the case of decomposition with three component ratios:

$$\Delta X_{a1} = \Delta a_1 \cdot a_{2,0} \cdot a_{3,0}$$
$$\Delta X_{a2} = a_{1,1} \cdot \Delta a_2 \cdot a_{3,0}$$
$$\Delta X_{a3} = a_{1,1} \cdot a_{2,1} \cdot \Delta a_3 \qquad (2.21)$$

Symbols:

Where X is basic ratio, ΔX is absolute change in the basic ratio, a is component ratio, Δa is

absolute change in the component ratio, ΔX_{a1} is absolute change in the basic ratio caused by the change in the first component ratio.

2.4.2 Logarithmic decomposition method

The advantage of this method is we need just one formula for the impact quantification regardless of how many component ratios we have. The impact of the i-th component ratio on the change in the basic ratio is calculated as follows:

$$\Delta X_{ai} = \frac{lnI_{ai}}{lnI_x} \cdot \Delta X \tag{2.22}$$

Symbols:

Where X is basic ratio, ΔX is absolute change in the basic ratio, I_x=$\frac{X_1}{X_0}$ index of change in basic ratio, I_{ai}=$\frac{a_{i,1}}{a_{i,0}}$ index of change in component ratio.

2.4.3 Integral decomposition method

This method's procedure is similar as in the case of functional method:

$$\Delta X_{ai} = \frac{R_{ai}}{R_{x*}} \cdot \Delta X \tag{2.23}$$

Symbols:

Where X is basic ratio, ΔX is absolute change in the basic ratio, R_{x*}=$\sum_{i=1}^{N} R_{ai}$.

2.5 Sensitivity analysis

Sensitivity analysis is a variation on scenario analysis that is useful in pinpointing the areas where forecasting risk is especially severe. The basic idea with a sensitivity analysis is to freeze all of the variables except one and then see how sensitive our estimate of NPV is to changes in that one variable. If our NPV estimate turns out to be very sensitive to relatively small changes in the projected value of some component of project cash flow, then the forecasting risk associated with that variable is high.

Sensitivity analysis is a very commonly used tool. For example, in 1998, Cumberland Resources announced that it had completed a preliminary study of plans to spend $94 million

building a gold-mining operation in the Canadian Northwest Territories. Cumberland reported that the project would have a life of 10 years, a payback of 2.7 years, and an IRR of 18.9 percent assuming a gold price of $325 per ounce. However, Cumberland further estimated that, at a price of $300 per ounce, the IRR would fall to 15.1 percent, and, at $275 per ounce, it would be only 11.1 percent. Thus, Cumberland focused on the sensitivity of the project's IRR to the price of gold.[4]

[4] BREALEY, R. A., S. C. MYERS and A. J. MARCUS. (2012, P383)

3.Basic Financial Characteristic of the BMW AG Company

In this chapter, we will briefly introduce the current situation of BMW and study the basic financial situation of BMW.

3.1 The Basic Data of BMW

BMW AG is a German multinational company which currently produces automobiles and motorcycles, and also produced aircraft engines until 1945.

The company was founded in 1916 and is headquartered in Munich, Bavaria. BMW produces motor vehicles in Germany, Brazil, China, India, South Africa, the United Kingdom, and the United States. In 2015, BMW was the world's twelfth largest producer of motor vehicles, with 2,279,503 vehicles produced. The Quandt family are long-term shareholders of the company, with the remaining shares owned by public float.

Automobiles are marketed under the brands BMW (with sub-brands BMW M for performance models and BMW i for plug-in electric cars), Mini and Rolls-Royce. Motorcycles are marketed under the brand BMW Motorrad.

The company has significant motorsport history, especially in touring cars, Formula 1, sports cars and the Isle of Man TT.

BMW produces complete automobiles at its factories in Germany (Munich, Dingolfing (BMW Group Plant Dingolfing), Regensburg and Leipzig), United States (Greer, South Carolina), Mexico (San Luis Potosí), South Africa (Rosslyn), and China (Shenyang). BMW also has local assembly operation using complete knock down components in Thailand, Russia, Egypt, Indonesia, Malaysia, and India (Chennai), for 3, 5, 7 series and X3.

In 2006, the BMW group (including Mini and Rolls-Royce) produced 1,366,838 four-wheeled vehicles, which were manufactured in five countries. In 2010, it manufactured 1,481,253 four-wheeled vehicles and 112,271 motorcycles (under both the BMW and Husqvarna brands).

BMW Motorcycles are being produced at the company's Berlin factory, which earlier had produced aircraft engines for Siemens.

By 2011, about 56% of BMW-brand vehicles produced are powered by petrol engines and the remaining 44% are powered by diesel engines. Of those petrol vehicles, about 27% are four-cylinder models and about nine percent are eight-cylinder models. On average, 9,000 vehicles per day exit BMW plants, and 63% are transported by rail.[5]

3.2 BMW's important historical moments

BMW's origins can be traced back to three separate German companies: Rapp Motorenwerke, Bayerische Flugzeugwerke, and Automobilwerk Eisenach. The history of the name itself begins with Rapp Motorenwerke, an aircraft engine manufacturer. In April 1917, following the departure of the founder Karl Friedrich Rapp, the company was renamed Bayerische Motoren Werke (BMW). BMW's first product was the BMW IIIa aircraft engine. The IIIa engine was known for good fuel economy and high-altitude performance. The resulting orders for IIIa engines from the German military caused rapid expansion for BMW.

After the end of World War I in 1918, BMW was forced to cease aircraft engine production by the terms of the Versailles Armistice Treaty. To remain in business, BMW produced farm equipment, household items and railway brakes. In 1922, former major shareholder Camillo Castiglioni purchased the rights to the name BMW, which led to the company descended from Rapp Motorenwerke being renamed Süddeutsche Bremse AG (known today as Knorr-Bremse). Castiglioni was also an investor in another aircraft company, called "Bayerische Flugzeugwerke", which he renamed BMW.

BMW's production of automobiles began in 1928, when the company purchased the Automobilwerk Eisenach car company. Automobilwerk Eisenach's current model was the Dixi 3/15, a licensed copy of the Austin 7 which had begun production in 1927. Following the takeover, the Dixi 3/15 became the BMW 3/15, BMW's first production car.

[5] https://www.bmw.com/en/index.html

BMW's first SUV, the BMW X5 (E53), was introduced in 1999. The X5 was a large departure from BMW's image of sporting "driver's cars", however, it was very successful and resulted in other BMW X Series being introduced. The smaller BMW X3 was released in 2003.

BMW's first mass-production turbocharged petrol engine was the six-cylinder N54, which debuted in the 2006 E92 335i. In 2011, the F30 3 Series was released, with turbocharged engines being used on all models. This shift to turbocharging and smaller engines was reflective of general automotive industry trends. The M3 model based on the F30 platform is the first M3 to use a turbocharged engine.

BMW's first turbocharged V8 engine, the BMW N63, was introduced in 2008. Despite the trend to downsizing, in 2008 BMW began production of its first turbocharged V12 engine, the BMW N74. In 2011, the F10 M5 became the first M5 model to use a turbocharged engine.[6]

3.2.1 The Sustainable Development of BMW

In autumn 2015, the General Assembly of the United Nations adopted the 17 Sustainable Development Goals (SDGs) that formed the heart of the 2030 Agenda to shape economic growth in an equitable and environmentally sound way. The BMW Group is committed to this new social contract, and to attaining the SDGs that form its foundation. We are addressing the SDGs where we believe we can have the greatest impact though our sustainability strategy and with a focus on our value chain.

SDG 11 – Sustainable Cities and Communities: with our integrated mobility services and innovative approaches, we want to change mobility patterns in selected metropolitan areas in a sustainable way. These include our car-sharing services DriveNow and ReachNow, which increasingly offer electric vehicles, as well as the electric scooter specially designed for commuter traffic in cities. With the Urban Mobility competence center created in 2015, the BMW Group supports the paradigm shift from cities suitable for cars to cities suitable for people. The center acts as a platform through which the BMW Group works with cities and other partners to develop new concepts for future urban mobility with a view to making cities even

[6] https://www.bmw.cz/cs/index.html?bmw=grp:BMWcom:footer:nsc-link

more attractive to live in.

SDG 12 – Responsible Consumption and Production: we continuously reduce CO2 emissions and resource usage per vehicle produced. In our locations worldwide, we are increasingly focusing on renewable energy and are also working with our supplier network towards improving resource efficiency. The joint venture "Digital Energy Solutions," founded in 2015, also offers digital-based services to small and medium-sized companies, with a view to better harnessing the potential of renewable energy. The recycling of vehicle parts is also promoted with the joint venture Encory, founded in September 2016.

SDG 13 – Climate Action: if a consistent measurement method is applied, we are continuously reducing the CO2 emissions of our vehicle fleet. Electromobility is an essential component of our CO2 strategy. We are consistently increasing the proportion of electrified drive systems in our model range and therefore not only make a contribution towards the reduction of greenhouse gas emissions, but also towards improved air quality in urban areas.

For instance, the MINI Takes the States campaign raises money for Feeding America, a network of over 200 food banks that provide food to over 46 million people in need. The proceeds raised from MINI Takes the States 2018 supported one million meals—contributing to SDG 2 – Zero Hunger. The BMW Group is also focused on SDG 4 – Quality Education across the U.S. and at different levels. At BMW Manufacturing Co. in Spartanburg, South Carolina, the BMW Scholars program provides students access to affordable and highly valuable training with a direct path to employment. Similarly, BMW MSTEP training creates education opportunities for returning military service members, helping to ease their transition to civilian life. Additionally, BMW Financial Services is focused on tackling SDG 6 – Clean Water and Sanitation through its Care4Water project, which provides access to clean water for people in need.[7]

[7] https://www.bmwgroup.com/content/dam/bmw-group-websites/bmwgroup_com/company/downloads/en/2010/FIZ_2010_en.pdf

3.3 The Description of Basic Data of BMW

In this chapter, we will show you the simplified financial statement of BMW. We will use the data from 2013 to 2017, at the same time, the common size analysis and financial ratio analysis will be shown. And it is necessary for us to understand the basic data information about BMW.

3.3.1 The Simplified Balance Sheet of BMW

Table 3.1 the Simplified Balance Sheet of BMW from 2013 to 2017

	2017	2016	2015	2014	2013
Cash & Short-Term Investments	9039	7880	6122	7688	7671
Total Accounts Receivable	36346	34991	34600	29080	26532
Inventories	12707	11841	11071	11089	9595
Other Current Assets	13490	12152	9985	8940	8386
Net Property, Plant & Equipment	54728	55749	52724	47347	41082
Long-Term Note Receivable	48321	48032	41918	37485	32616
Other Assets	13575	14810	15709	5179	5125
Intangible Assets	9464	8157	7372	6499	6179
Total Assets	203496	199423	182162	154803	138377
Total Equity	54548	47363	42764	37437	35600
Total Current Liabilities	69047	67989	65591	59078	51134
Long-Term Debt	52212	55405	47171	41954	38773
Liabilities & Shareholders' Equity	203496	199423	182162	154803	138377

Sources: https://quotes.wsj.com/XE/XETR/BMW/financials/annual/balance-sheet

3.3.2 The Simplified Cash Flow of BMW

Table 3.2 the Simplified Cash Flow of BMW from 2013 to 2017

	2017	2016	2015	2014	2013
Net Income before Extraordinaires	8,506	6,821	5,175	7,293	5,774
Net Income Growth	0.2599	0.0804	0.0995	0.0916	-
Depreciation, Depletion & Amortization	4,822	4,806	4,659	4,170	3,741
Depreciation and Depletion	3395	3403	3318	2924	2494
Deferred Taxes & Investment Tax Credit	-609	85	77	116	-17
Other Funds	-8626	-9871	-10693	-7096	-7003
Funds from Operations	4293	1930	439	3007	2050
Changes in Working Capital	1451	1125	257	-228	1955
Net Operating Cash Flow	5744	3055	696	2779	4005

Sources: https://quotes.wsj.com/XE/XETR/BMW/financials/annual/cash-flow

3.3.3 The Simplified Income Statement of China Mobile

Table 3.3 the Simplified Income Statement of BMW from 2013 to 2017

	2017	2016	2015	2014	2013
Revenue	98678	94163	92175	80401	76059
Cost of Goods Sold (COGS) incl. D&A	73824	71148	69,772	59261	56673
SG&A Expense	15,638	15,673	14,519	13,690	12,858
Other Operating Expense	442	188	238	243	304
Non-Operating Income/Expense	-164	-161	187	113	162
Non-Operating Interest Income	201	196	185	201	187
Interest Expense	265	327	423	326	330
Minority Interest Expense	86	47	27	19	26
Net Income	8620	6863	6369	5798	5303

Sources: https://quotes.wsj.com/XE/XETR/BMW/financials/annual/income-statement

3.4 The Common-size Analysis of BMW

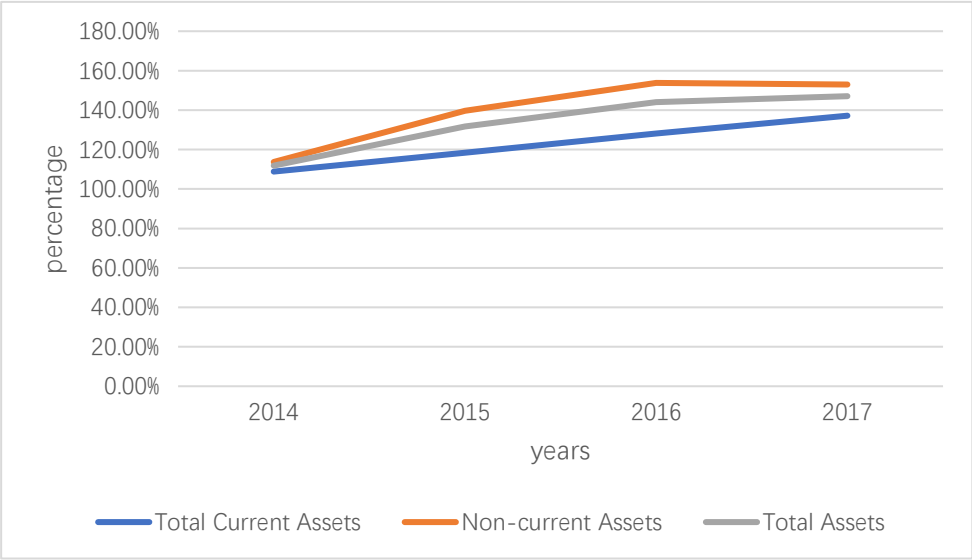
Based on the data of financial statements, we will represent the common-size analysis and divided it into two parts, horizontal analysis and vertical analysis. In this chapter, we will introduce the common-size analysis of three financial statements of BMW from 2013 to 2017.

3.4.1 The Horizontal Analysis

Table 3.4 horizontal common size analysis of asset

	2013	2014	2015	2016	2017
Total Current Assets	100.00%	108.84%	118.38%	128.13%	137.17%
Non-current Assets	100.00%	113.71%	139.67%	153.79%	153.04%
Total Assets	100.00%	111.87%	131.64%	144.12%	147.06%

Figure 3.1 horizontal common size analysis of asset



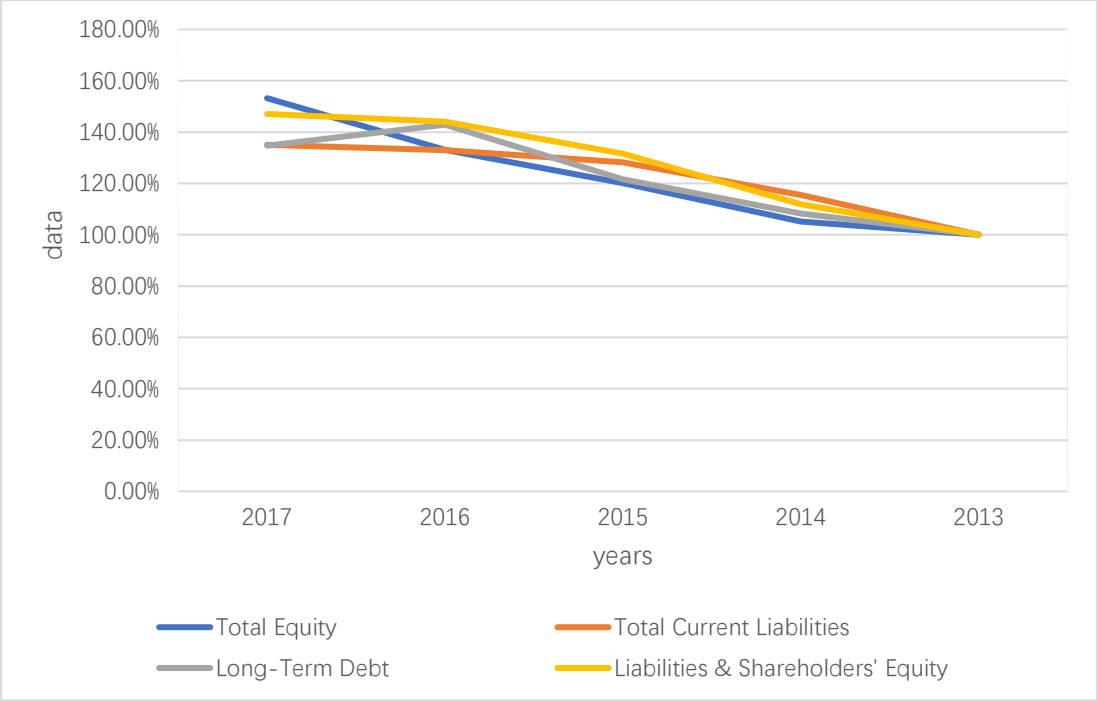
From Figure 3.1, we divided assets into three parts, which are total current assets, non-current assets and total assets. As we can see, from 2014 to 2017, total current assets increased steadily, which increased almost forty percent for five years. At the same time, non-current assets were increased from 2014 to 2016, there was a slight drop in the following year. Because of the changes of current assets and non-current assets, the total assets are also increased during 2014 and 2016,.But between 2016 and 2017, the rate of growth has become much smoother.

In table 3.1, we can see obviously that the Net Property, Plant & Equipment has decreased between 2016 and 2017, which means BMW company reduced spending in this area, and it caused the decreased of non-current asset.

Table 3.5 horizontal common size analyses of liability and equity

	2017	2016	2015	2014	2013
Total Equity	54548	47363	42764	37437	35600
Total Current Liabilities	69047	67989	65591	59078	51134
Long-Term Debt	52212	55405	47171	41954	38773
Liabilities & Shareholders' Equity	203496	199423	182162	154803	138377
	2017	2016	2015	2014	2013
Total Equity	153.22%	133.04%	120.12%	105.16%	100.00%
Total Current Liabilities	135.03%	132.96%	128.27%	115.54%	100.00%
Long-Term Debt	134.66%	142.90%	121.66%	108.20%	100.00%
Liabilities & Shareholders' Equity	147.06%	144.12%	131.64%	111.87%	100.00%

Figure 3.2 horizontal common size analyses of liability and equity



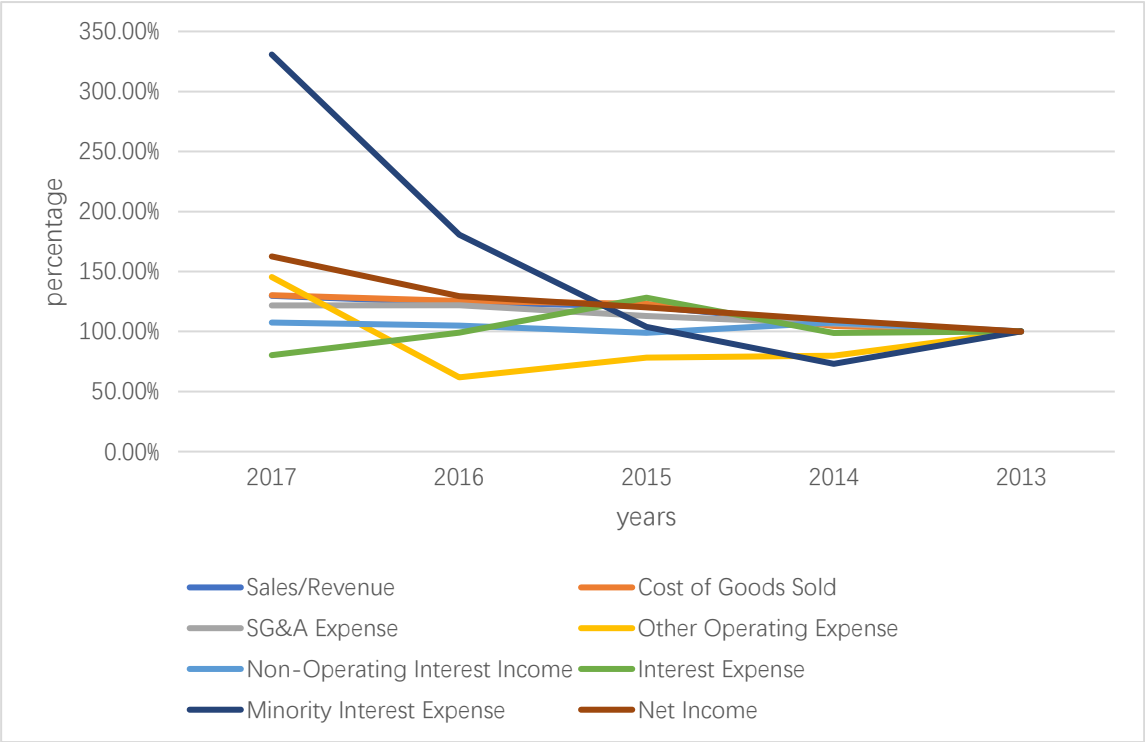
According to figure 3.2, the Total current liabilities, total equity and liabilities & shareholder's equity are all increased steadily, the long-term debt was increased from 2013 to 2016, but turned to decreased from 2016 to 2017. Total equity increased the most during the past five years, reaching a peak in 2017, which is 153.22%. That is to say, it has increased by 53.22% in five years. It means BMW chooses to hold onto its profits and either hold them as cash or use them to invest internally in its business.

The change of long-term debt shows BMW might issue less bond during 2016-2017, and it means the company is growing or thriving, as it is no longer relying on its debt and is making payments to lower it.

Table 3.6 horizontal common size analysis of income statement

	2017	2016	2015	2014	2013
Sales/Revenue	129.74%	123.80%	121.19%	105.71%	100.00%
Cost of Goods Sold	130.26%	125.54%	123.11%	104.57%	100.00%
SG&A Expense	121.62%	121.89%	112.92%	106.47%	100.00%
Other Operating Expense	145.39%	61.84%	78.29%	79.93%	100.00%
Non-Operating Interest Income	107.49%	104.81%	98.93%	107.49%	100.00%
Interest Expense	80.30%	99.09%	128.18%	98.79%	100.00%
Minority Interest Expense	330.77%	180.77%	103.85%	73.08%	100.00%
Net Income	162.55%	129.42%	120.10%	109.33%	100.00%

Figure3.3 horizontal common size analysis of income statement



From figure 3.3 we can clearly see that the minority interest expense has a huge change. From 2013 to 2014, it decreased to the lowest point, which is 73.08%. But between 2014 and 2017, its value has grown rapidly. In 2017, the minority interest expense got to 330.77%, which is more than four times in 2014. A minority interest is ownership or interest of less than 50% of an enterprise. The term can refer to either stock ownership or a partnership interest in a company.

The minority interest of a company is held by an investor or another organization other than the parent company.

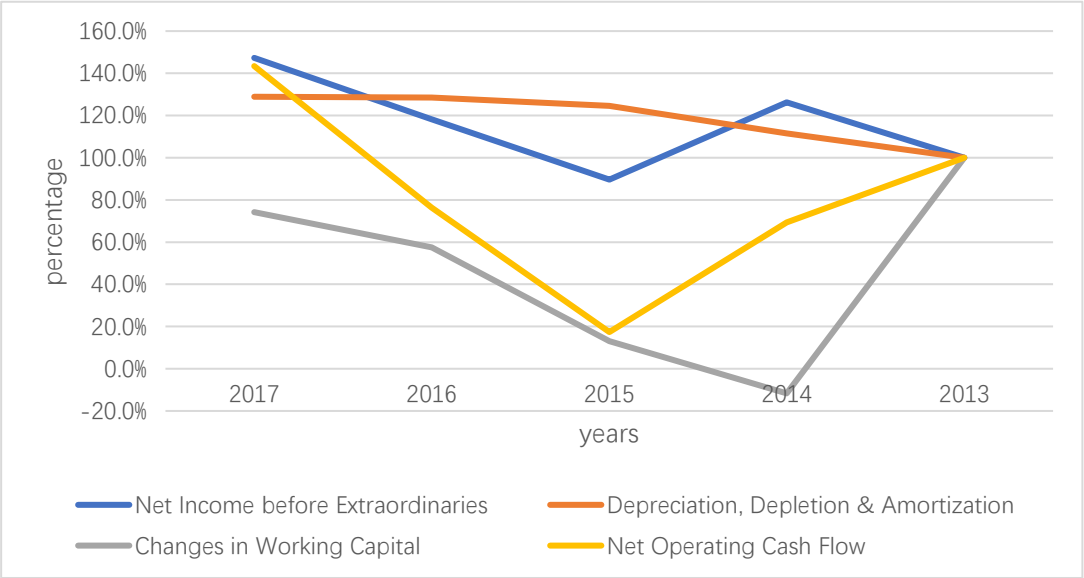
The other operating expenses has smooth reduction between 2013 and 2016, but it has a great change during the last year, which increased 92.55%. We can infer from this data that BMW has increased operating costs during the year, indicating that BMW received more orders during the year, thus increasing the operating cost.

The other projects have changed relatively flatly over the past five years without much ups and downs.

Table 3.7 horizontal common size analysis of cash flow statement

	2017	2016	2015	2014	2013
Net Income before Extraordinaires	147.3%	118.1%	89.6%	126.3%	100.0%
Depreciation, Depletion & Amortization	128.9%	128.5%	124.5%	111.5%	100.0%
Changes in Working Capital	74.2%	57.5%	13.1%	-11.7%	100.0%
Net Operating Cash Flow	143.4%	76.3%	17.4%	69.4%	100.0%

Figure3.4 horizontal common size analysis of cash flow statement



According to figure 3.4, there is a great change in changes in working capital during these five years, from 2013 to 2014, the value falls from the peak to the bottom, even a negative value. It

represents BMW company faced a serious problem in the year. Working capital equals current assets minus current liabilities, if current assets - current liabilities < 0, then current liabilities financing, shared by long - term assets such as current assets and fixed assets, the solvency is poor. But after 2014, the percentage of changes in working capital was increased fast.

Net operating cash flow's trend is similar as changes in working capital, which is decreased between 2013 to 2015, and later increased from 2015 to 2017. In 2015, the data was 17.4%, it is the lowest one during these five years. It shows the cash flow in operating was decreasing, it refers the revenue is less than the cost in operating.

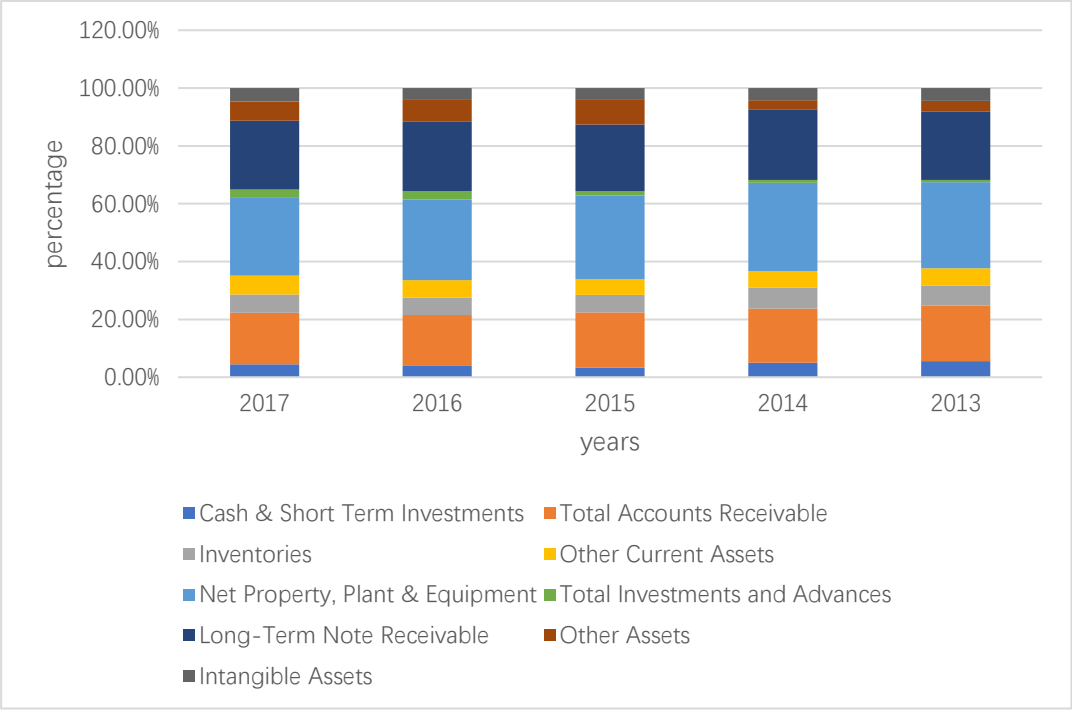
Net income has been a tortuous trend in the first three years. It has experienced a process of rising first and then falling, but it tends to rise steadily after 2015. At the end of 2017, the overall increase was 47.3% compared with five years ago.

3.4.2 The Vertical Analysis

Table 3.8 the vertical common size analysis of balance sheet

	2017	2016	2015	2014	2013
Cash & Short-Term Investments	4.44%	3.95%	3.36%	4.97%	5.54%
Total Accounts Receivable	17.86%	17.55%	18.99%	18.79%	19.17%
Inventories	6.24%	5.94%	6.08%	7.16%	6.93%
Other Current Assets	6.63%	6.09%	5.48%	5.78%	6.06%
Net Property, Plant & Equipment	26.89%	27.96%	28.94%	30.59%	29.69%
Total Investments and Advances	2.86%	2.91%	1.46%	0.97%	0.86%
Long-Term Note Receivable	23.75%	24.09%	23.01%	24.21%	23.57%
Other Assets	6.67%	7.43%	8.62%	3.35%	3.70%
Intangible Assets	4.65%	4.09%	4.05%	4.20%	4.47%
Total Assets	100.00%	100.00%	100.00%	100.00%	100.00%

Figure3.5 the vertical common size analysis of balance sheet



From figure3.5, We can clearly see that Net Property, Plant & Equipment has the largest proportion in the asset and is in a more important position. Secondly, the long-term note receivable and total account receivable are taking almost the same proportion in total asset.

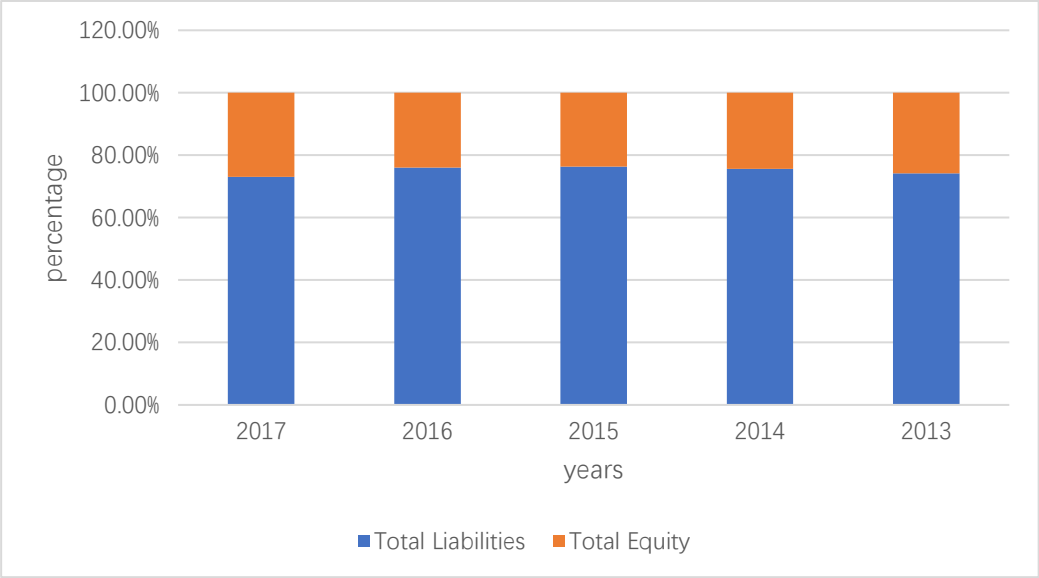
For the receivables, we can clearly see from the figure that it accounted for the largest proportion in 2013, which reflects that the management of the company's receivables is gradually weakening, and the reputation in the customer's mind is more general.

As can be seen from the figure, the least proportion of assets are Cash & Short-Term Investments and Intangible Assets. This represents a relatively small proportion of cash and intangible assets in BMW's assets. And this is the difference between big and small companies. Although the proportion of cash is small, the total amount of cash will be larger than that of small companies.

Table 3.9 the vertical common size analysis of equity and liability

	2017	2016	2015	2014	2013
Total Liabilities	148,644	151,708	139,131	117,091	102,604
Total Equity	54852	47715	43031	37712	35773
Liabilities &Equity	203496	199423	182162	154803	138377
	2017	2016	2015	2014	2013
Total Liabilities	73.05%	76.07%	76.38%	75.64%	74.15%
Total Equity	26.95%	23.93%	23.62%	24.36%	25.85%
Liabilities & Equity	100.00%	100.00%	100.00%	100.00%	100.00%

Figure3.6 the vertical common size analysis of equity and liability



As the figure 3.6, We can clearly see that the total liabilities are much higher than total equity, total liabilities account for about 70% of the total weight.

In the balance sheet, the liability is greater than the owner's equity, indicating that the financial position of the company is not very good. It is generally considered that the financial situation of an enterprise with a debt ratio (debt ratio = liabilities/total assets) higher than 45% is abnormal. When the bank is reviewing the loan target, the debt ratio is higher than 45%, and it is generally not considered.

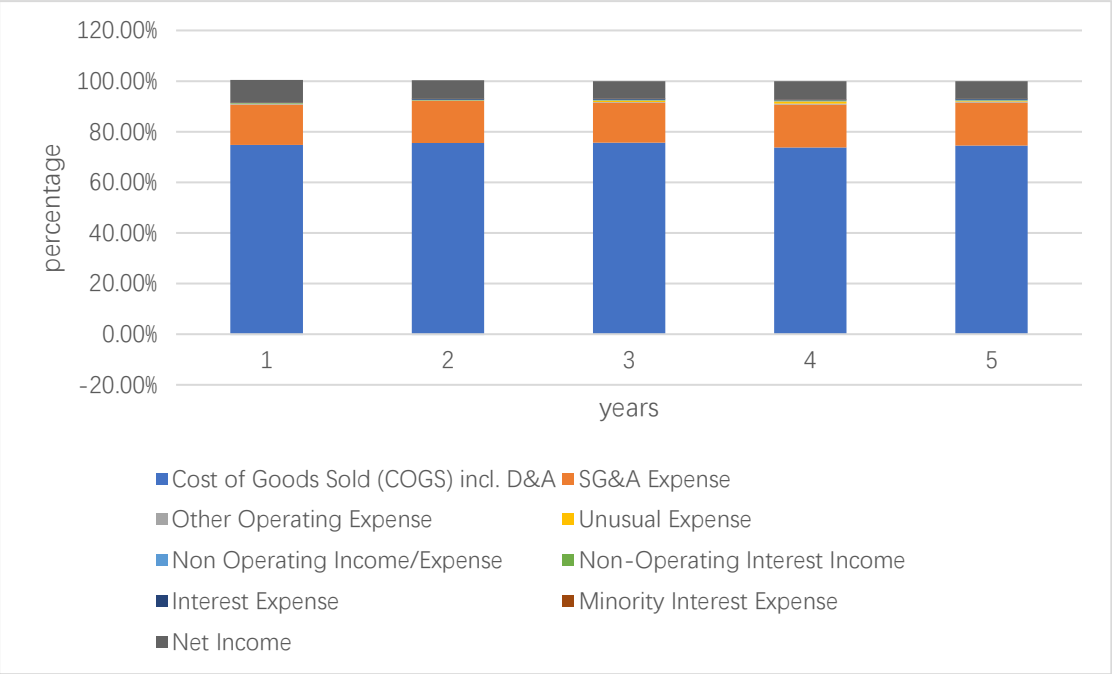
The ratio of property rights is used to indicate the relative relationship between the creditors

and the sources of funds provided by the investors, reflecting whether the basic financial structure of the firm is stable. In general, the capital provided by the owner is greater than the borrowed capital. The lower the indicator, the stronger the long-term solvency of the enterprise, the higher the degree of protection of the creditor's rights and the smaller the risk. However, from the data of BMW, the company's operation in the past five years is not ideal, and the property rights ratio is relatively high, which is not conducive to the protection of creditors' rights.

Table 3.10 the vertical common size analysis of income statement

Sales/Revenue	100.00%	100.00%	100.00%	100.00%	100.00%
Cost of Goods Sold (COGS) incl. D&A	74.81%	75.56%	75.70%	73.71%	74.51%
SG&A Expense	15.85%	16.64%	15.75%	17.03%	16.91%
Other Operating Expense	0.45%	0.20%	0.26%	0.30%	0.40%
Unusual Expense	-0.24%	-0.13%	0.49%	0.93%	0.28%
Non-Operating Income/Expense	-0.17%	-0.17%	0.20%	0.14%	0.21%
Non-Operating Interest Income	0.20%	0.21%	0.20%	0.25%	0.25%
Interest Expense	0.27%	0.35%	0.46%	0.41%	0.43%
Minority Interest Expense	0.09%	0.05%	0.03%	0.02%	0.03%
Net Income	8.74%	7.29%	6.91%	7.21%	6.97%

Figure3.7 the vertical common size analysis of income statement



According to table 3.10 and figure 3.7, we can see that Cost of Goods Sold has the largest share of the whole, and it has an important influence on the overall position in the cost, and its data is relatively average over the past five years, there is no significant change.

Among them, SG&A cost, which has a secondary position, accounted for a larger proportion in the fourth year than other years, indicating that BMW has increased its management of the company during the year and may have hired more managers. To increase costs for the company's operations and management.

4. Analysis of the Profitability of the BMW AG Company

In the previous chapters, we have already learned about basic financial analysis. In addition to this, we have a basic information about our research, which is BMW, including a brief introduction of BMW, its operations in recent years, as well as its financial statements and common size analysis.

4.1 Financial Ratio Analysis

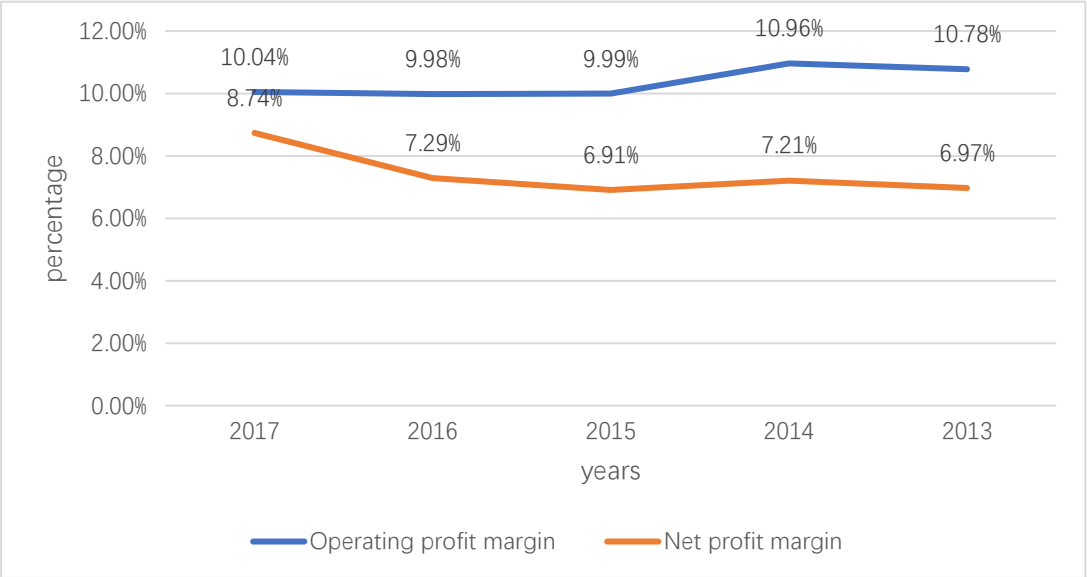
In this chapter, we will use financial ratio analysis, to compare line-item data from a company's financial statements to reveal insights regarding profitability, liquidity, operational efficiency, and solvency. Ratio analysis can be used to look at trends over time for one company or to compare companies within an industry or sector.

4.1.1 Profitability ratios analysis

Table 4.1 the profitability ratio

	2017	2016	2015	2014	2013
Operating profit margin	10.04%	9.98%	9.99%	10.96%	10.78%
Net profit margin	8.74%	7.29%	6.91%	7.21%	6.97%
Return on assets	4.87%	4.71%	5.06%	5.69%	5.92%
Return on equity	15.80%	14.49%	14.89%	15.49%	14.90%

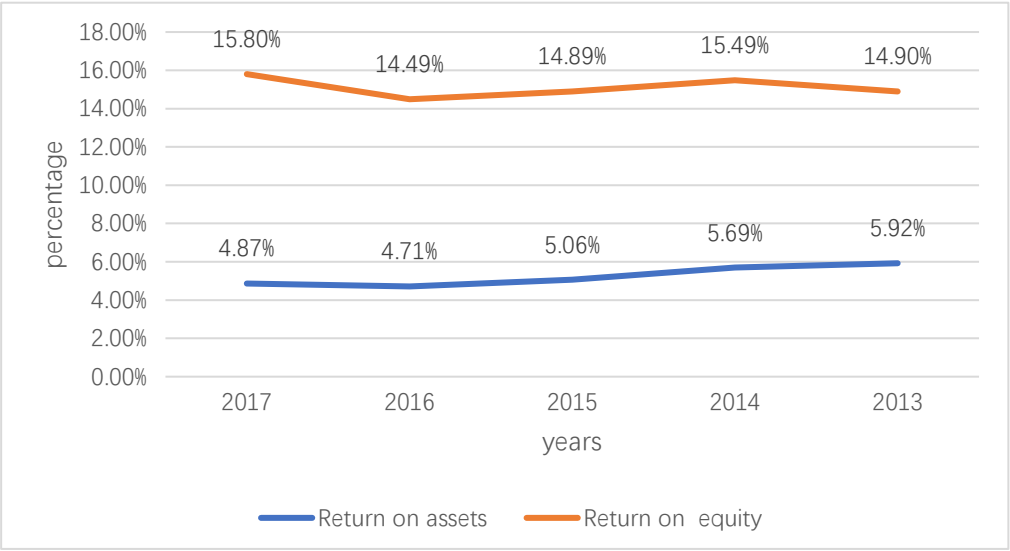
Figure 4.1 the profitability ratio



First of all, we can see from the figure 4.1 that between 2013 and 2017, the operating profit margin has not changed much in the past five years. The overall trend is downward. The lowest value is 9.98% in 2016, and the highest value is 9.96% in 2014. Operating Profit Margin is a profitability or performance ratio used to calculate the percentage of profit a company produces from its operations, prior to subtracting taxes and interest charges. It shows the profitability of BMW have been decreased from 2013 to 2017.

Conversely, net profit margin has shown a steady upward trend during the past five years, from 6.97% in 2013 to 8.74% in 2017, a total increase of 1.77%. The net profit margin, also known as net margin, indicates how much net income a company makes with total sales achieved. A higher net profit margin means that BMW is more efficient at converting sales into actual profit. Net profit margin analysis is not the same as gross profit margin.

Figure 4.2 the profitability ratio



The trend of return on equity has been relatively flat in the past five years and has remained at a certain level without major fluctuations. Which shows the net income of BMW is stable and the shareholders can get the profit regularly. BMW uses investments to generate earnings growth very well.

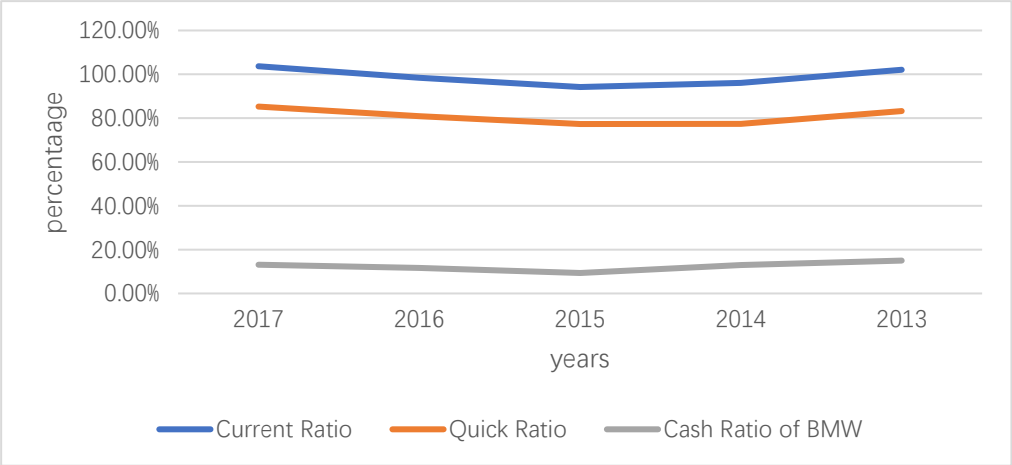
Return on assets measures how efficient a company's management is in generating earnings from their economic resources or assets on their balance sheet. From figure 4.2, Return on assets was generally down from 2013 to 2017, which means BMW's profitable is weaker. ROA gives investors a reliable picture of management's ability to pull profits from the assets and projects into which it chooses to invest. The metric also provides a good line of sight into net margins and asset turnover, two key performance drivers. ROA makes the job of fundamental analysis easier, helping investors recognize good stock opportunities and minimizing the likelihood of unpleasant surprises.

4.1.2 Liquidity ratios analysis

Table 4.2 the liquidity ratio

	2017	2016	2015	2014	2013
Current Ratio	103.67%	98.35%	94.19%	96.14%	102.05%
Quick Ratio	85.27%	80.93%	77.31%	77.37%	83.29%
Cash Ratio of BMW	13.09%	11.59%	9.33%	13.01%	15.00%

Figure 4.3 the liquidity ratio



Combined Table 4.2 and Figure 4.3, we can see that current ratio shows a trend of falling first and then rising. In 2015, the current ratio reached its lowest point and began to rebound. This means that the company's short-term solvency also shows a tendency to decline first. As for quick ratio, which measures the ability of a company to pay its current liabilities when they come due with only quick assets, appears the same trend as current ratio, falling first and then rising, the lowest point is 77.31%. Finally, the cash ratio, which shows how quickly the firm can pay off its liabilities relative to cash, also fall first and then rise.

Overall, after the analysis, we can conclude that the level of the liquidity ability of the company decreased from 2013-2015 and later makes progress from 2015 till now. However, these ratios are still lower compared to the average level of the industry so BWM should focus more on its liquidity ability and improve itself in the future.

4.1.3 Solvency ratios analysis

Table 4.3 solvency ratio

	2017	2016	2015	2014	2013
debt ratio of BMW	73.05%	76.07%	76.38%	75.64%	74.15%
debt-to-equity ratio of BMW	272.50%	320.31%	325.35%	312.77%	288.21%

Figure 4.4 solvency ratio

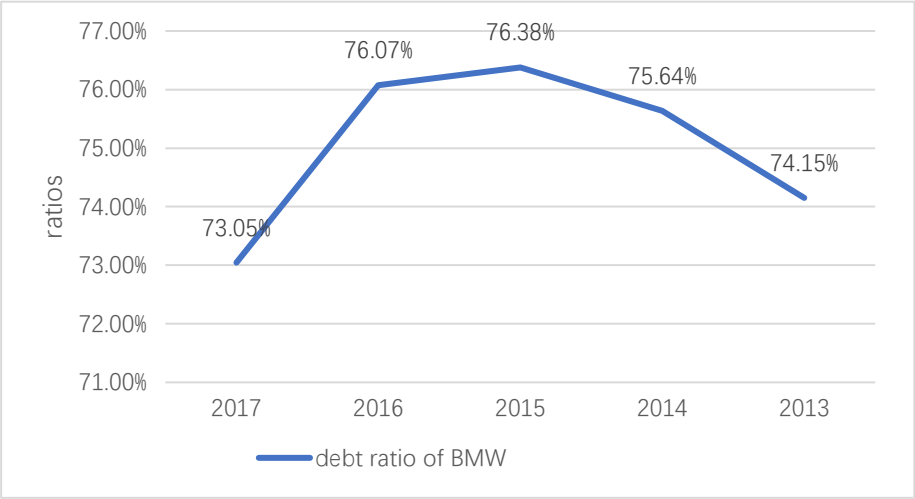
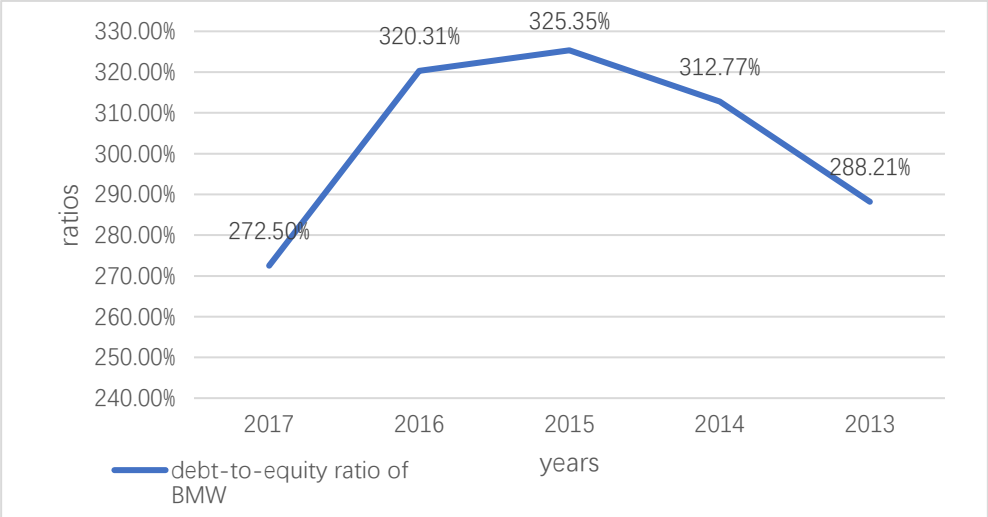


Figure 4.5 solvency ratio



Combined Table 4.3, Figure 4.4 and Figure 4.5, firstly, we will analysis the debt ratio. We can see BMW's Debt Ratio has always remained between 73% and 76%. Between 2014 and 2016, it was relatively stable, at about 76%. After 2016, BMW's Debt Ratio began to decline. From

2016 to 2017, the company's Debt Ratio decreased from 76% to 73%. This shows that the proportion of debt in company's assets has gradually become smaller. The reason for this change is the reduction in the proportion of liabilities in total assets in the asset restructuring conducted by BMW in 2016.

As for the debt-to-equity ratio, we can see BMW's Debt-to-equity Ratio has always remained between 270% and 325%. Same as debt ratio, between 2014 and 2016, it was relatively stable, at about 320%. After 2016, BMW's Debt Ratio began to decline. From 2016 to 2017, the company's Debt Ratio decreased from 320% to 272%. In general, the lower the debt to equity ratio, the better. The lower the ratio, the smaller the company's debt to equity ratio. The higher the company's ability to pay its debts. The data shows the company's debt is much higher than its equity in all time, so it maybe not a good signal for the company's development.

4.1.4 Assets management (activity) ratios

Table 4.4 assets management （activity）ratio

	2017	2016	2015	2014	2013
Average collection period	132.60	133.78	135.13	130.21	125.58
Accounts receivable turnover	2.71	2.69	2.66	2.76	2.87
Total assets turnover	0.48	0.47	0.51	0.52	0.55

Figure 4.6 Assets management (activity) ratio

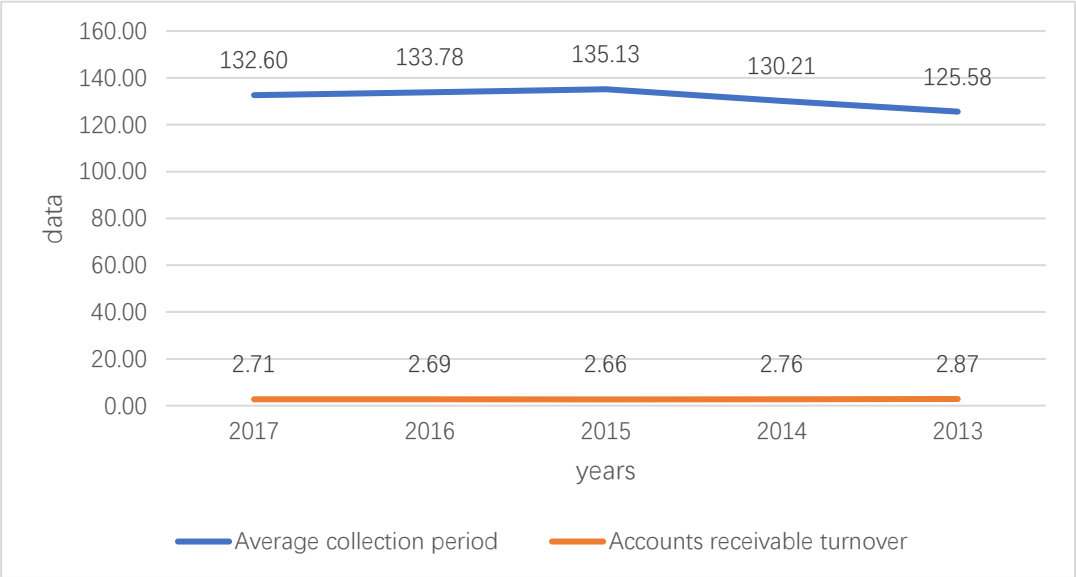
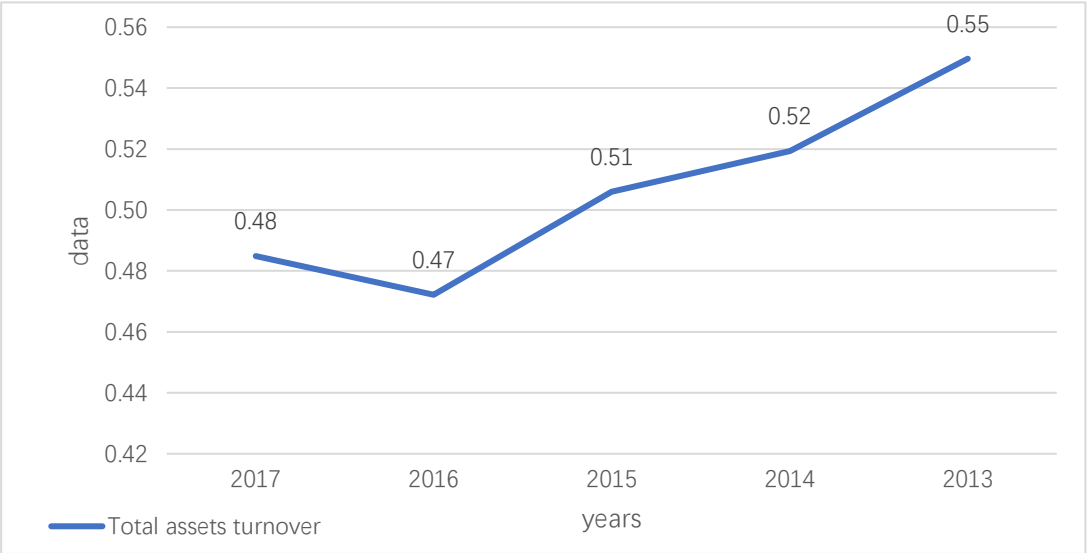


Figure 4.7 Assets management (activity) ratio



Combined Table 4.4, Figure 4.6 and Figure 4.7, we can see that the company's ACP has remained around 130 from 2013 to 2017 and is relatively stable. This means that it takes about 130 days for BMW to convert accounts receivable into cash. ART from 2013 to 2017 is about 2.7, which means that BMW's accounts receivables can be paid in a timely and the possibility of bad debts is high. TAT also shows a declining trend overall. In general, the higher this ratio, the better it is for a firm because this means it can generate more sales with some certain level of assets So here it means the revenue generated by assets has reduced. BMW's asset utilization efficiency is reduced.

4.2 Financial ratios assessment of selected company

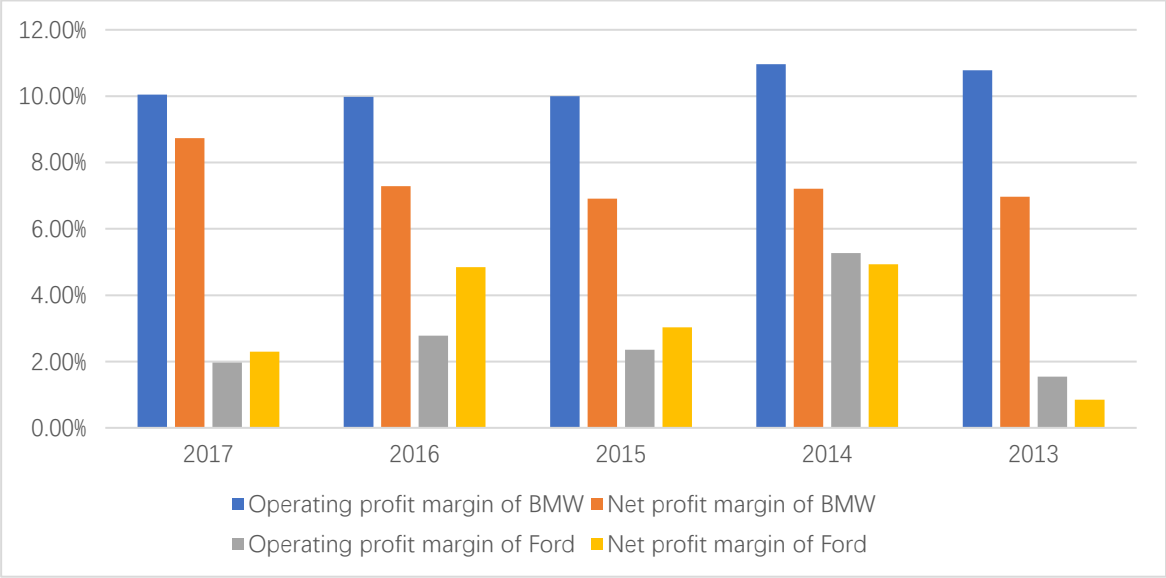
In this part, I chose Ford Motor Co. as a competition to compare with BMW, which is similar to BMW in some areas. We will use financial ratios to analysis the differences between this two companies from 2013 to 2017. It can be discovered the strengths and weaknesses by these ratios.

4.2.1 Profitability ratio analysis

Table 4.5 Profitability ratio

	2017	2016	2015	2014	2013
Operating profit margin of BMW	10.04%	9.98%	9.99%	10.96%	10.78%
Net profit margin of BMW	8.74%	7.29%	6.91%	7.21%	6.97%
Operating profit margin of Ford	1.97%	2.78%	2.36%	5.27%	1.55%
Net profit margin of Ford	2.29%	4.85%	3.03%	4.93%	0.85%

Figure 4.8 profitability ratios

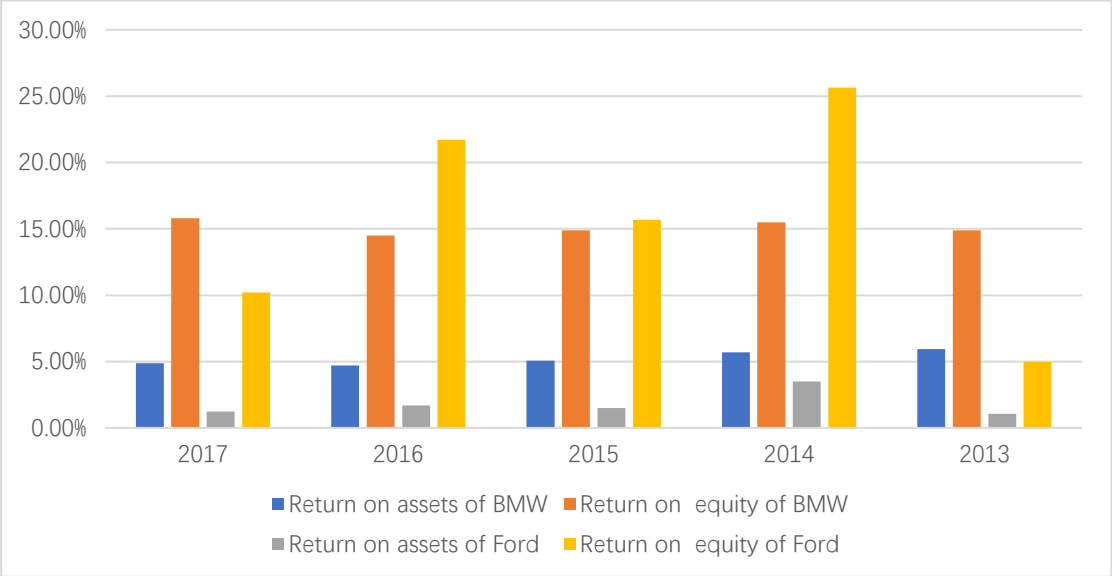


First of all, as figure 4.8, we can see the net profit margin of BMW is much higher than Ford. And the gap between the two is significantly shortened in 2014. From the income statement, we can see the interest expenses of BMW is much less than Ford Motor Co., this also led to the

net profit margin of Ford is less than BMW.

Secondly, let's see the operating profit margin, BMW still performs better than Ford in this respect. But the gap between them is significantly smaller than operating profit margin. According these data, we can know that BMW has the higher business efficiency, have the ability to achieve higher profits. Taken together, we can think that Ford's overall profitability is worse than that of BMW. Therefore, we recommend that Ford Company strengthen its business capabilities, control production and operating costs, increase revenue, and improve its overall level.

Figure 4.9 profitability ratio



According to the histogram in Figure 4.9, we can see that BMW's ROA is significantly higher than Ford. Based on what we have learned, a higher return on assets value indicates that a business is more profitable and efficient. In this regard, BMW's performance is better than Ford.

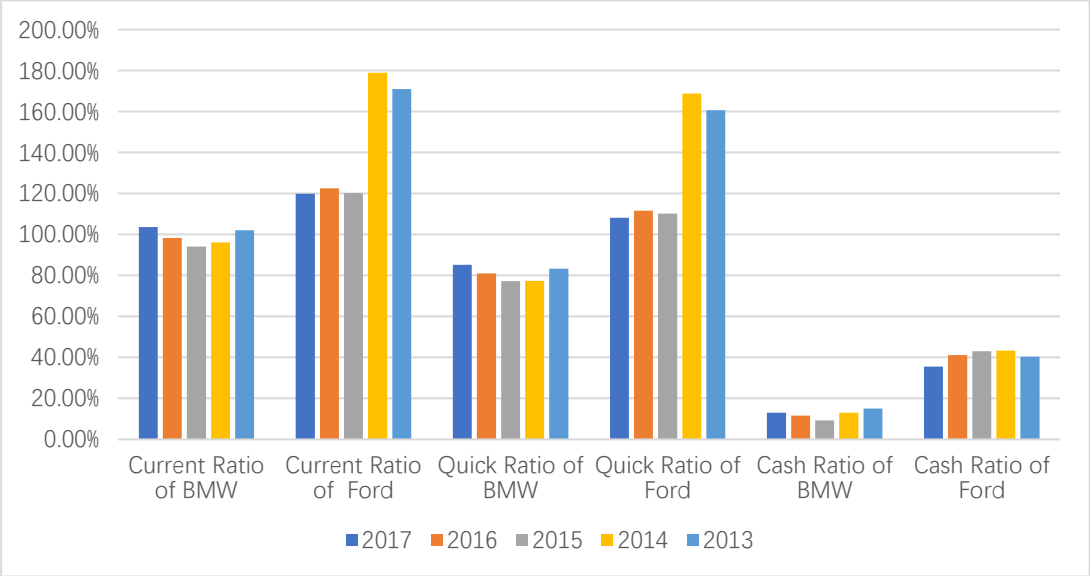
However, in my opinion, BMW and Ford are comparable in ROE performance. Return on equity (ROE) is a measure of financial performance calculated by dividing net income by shareholders' equity. It is a profitability ratio that measures the ability of a firm to generate profits from its shareholders investments in the company. In other words, the return on equity ratio shows how much profit each dollar of common stockholders' equity generates.

4.2.2 Liquidity ratios analysis

Table 4.6 liquidity ratio

	2017	2016	2015	2014	2013
Current Ratio of Ford	119.96%	122.52%	120.14%	179.01%	170.96%
Current Ratio of BMW	103.67%	98.35%	94.19%	96.14%	102.05%
Quick Ratio of Ford	108.22%	111.65%	110.28%	168.78%	160.75%
Quick Ratio of BMW	85.27%	80.93%	77.31%	77.37%	83.29%
Cash Ratio of BMW	13.09%	11.59%	9.33%	13.01%	15.00%
Cash Ratio of Ford	35.53%	41.15%	43.01%	43.29%	40.39%

Figure 4.11 liquidity ratio



As figure 4.11, it shows current ratio, quick ratio, cash ratio these three ratios of BMW and Ford from 2013 to 2017. They are very important to measure the liquidity of every company.

As for Ford, apparently, on the one hand, the current ratio hand quick ratio of Ford both appears the trend that keep stable from 2013-2015 then rise from 2015-2016 and finally suffer a little decrease from 2016-2017. On the other hand, both these two ratios of Ford are higher than 100%, which seems is higher than the average level of the industry. The cash ratio of Ford keeps in a stable level these years, which is about 40%, is neither a good nor a bad number compared to the average level. Overall, the Ford has a good performance in liquidity ability.

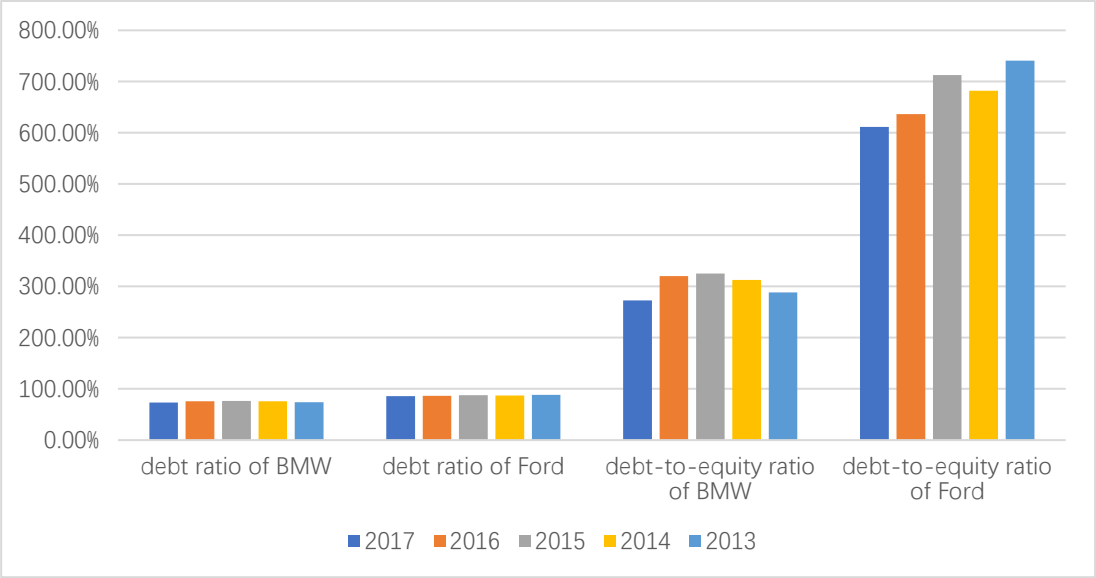
Compared these two competitors, we can see that the current ratio, cash ratio and quick ratio of BMW are much lower than Ford. In general, the higher is the liquidity ratio, the better is the liquidity ability. So, we can indicate that the liquidity ability of BMW is not as good as Ford, as the competition, this should attract BMW's attention.

4.2.3 Solvency ratios analysis

Table 4.7 solvency ratio

	2017	2016	2015	2014	2013
debt ratio of BMW	73.05%	76.07%	76.38%	75.64%	74.15%
debt ratio of Ford	85.94%	86.42%	87.69%	87.22%	88.11%
debt-to-equity ratio of BMW	272.50%	320.31%	325.35%	312.77%	288.21%
debt-to-equity ratio of Ford	611.31%	636.26%	712.59%	682.32%	740.95%

Figure 4.12 solvency ratio



As figure 4.12, it shows debt ratio and debt-to-equity ratio, these two ratios of BMW and Ford from 2013 to 2017. They are very important to measure the solvency of every company.

Overall, we can see that the debt ratio and debt-to-equity ratio of BMW are lower than Ford.

In general, the lower is the solvency ratio, the better is the solvency ability. So, we can indicate that the solvency ability of BMW is better than Ford, as the competition, BMW should keep this ability in a high level.

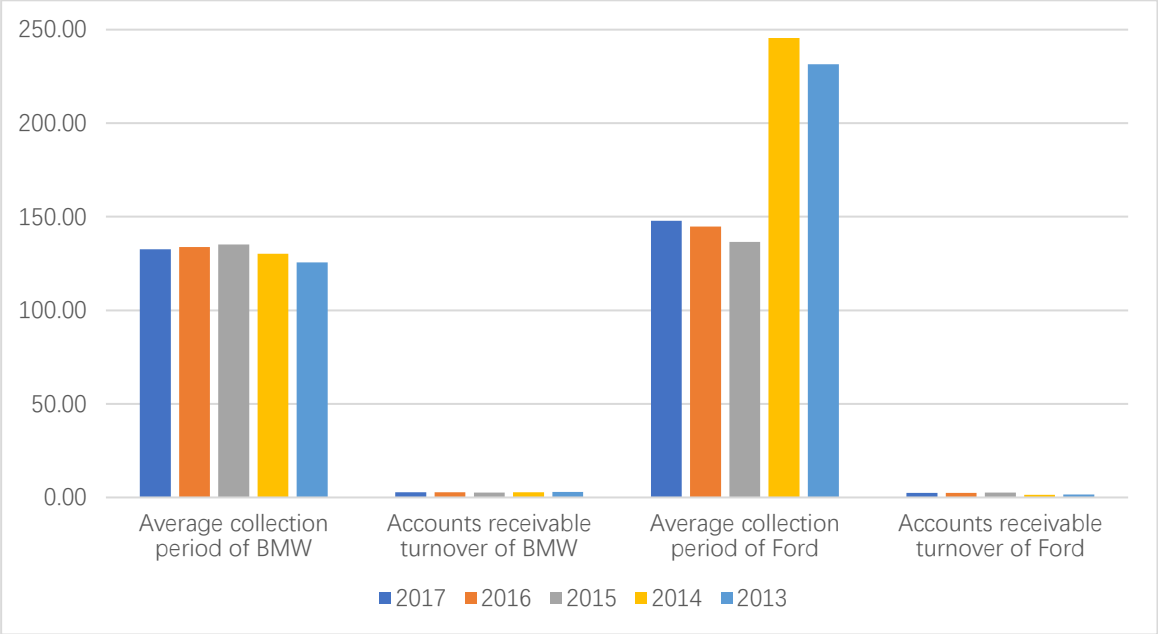
At the same time, debt of ratio of BMW is also lower than Ford, which measures the extent of a company's leverage. The lower the percentage, the less leverage a company is using and the stronger its equity position. In general, the higher the ratio, the more risk that company is considered to have taken on.

4.2.4 Assets management (activity) ratios

Table 4.8 activity ratio

	2017	2016	2015	2014	2013
Average collection period of BMW	132.60	133.78	135.13	130.21	125.58
Accounts receivable turnover of BMW	2.71	2.69	2.66	2.76	2.87
Average collection period of Ford	147.76	144.78	136.58	245.46	231.44
Accounts receivable turnover of Ford	2.44	2.49	2.64	1.47	1.56

Figure 4.14 activity ratios



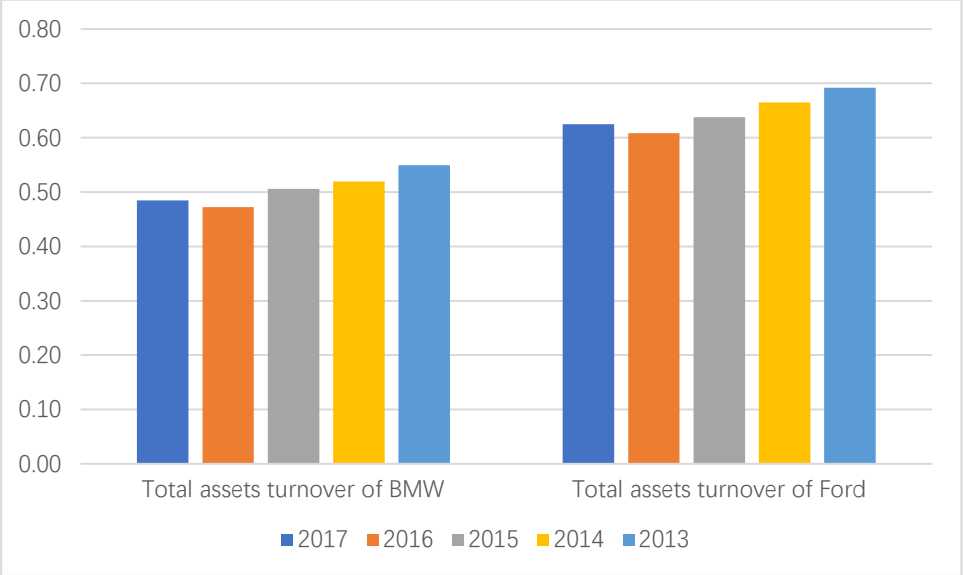
Firstly, we already known that the average collection period is the average number of days between 1) the dates that credit sales were made, and 2) the dates that the money was received/collected from the customers. The average collection period is also referred to as the days' sales in accounts receivable. As figure 4.14, we can see that BMW is lower than Ford. Which means Ford is better at turning time into cash income.

Secondly, from table 4.8, although there are only subtle differences, but we can still analyze that accounts receivable turnover of BMW is higher than Ford. Accounts receivable turnover is the number of times per year that a business collects its average accounts receivable. The ratio is used to evaluate the ability of a company to efficiently issue credit to its customers and collect funds from them in a timely manner. The data shows BMW has superior management in this term of receivable. And Ford need to collect credit in a timely manner.

Table 4.9 Activity ratio

	2017	2016	2015	2014	2013
Total assets turnover of BMW	0.48	0.47	0.51	0.52	0.55
Total assets turnover of Ford	0.63	0.61	0.64	0.66	0.69

Figure 4.15 activity ratio 2



The asset turnover ratio is an efficiency ratio that measures a company's ability to generate sales from its assets by comparing net sales with average total assets. In other words, this ratio shows how efficiently a company can use its assets to generate sales. From figure 4.15, total assets turnover of BMW is much lower than Ford, which shows BMW has a higher profit margin.

Combine all the above analysis, BMW has the better behavior than Ford. Which means the solvency of BMW was better than Ford from 2013 to 2017.

4.3 Pyramidal Decomposition Analysis

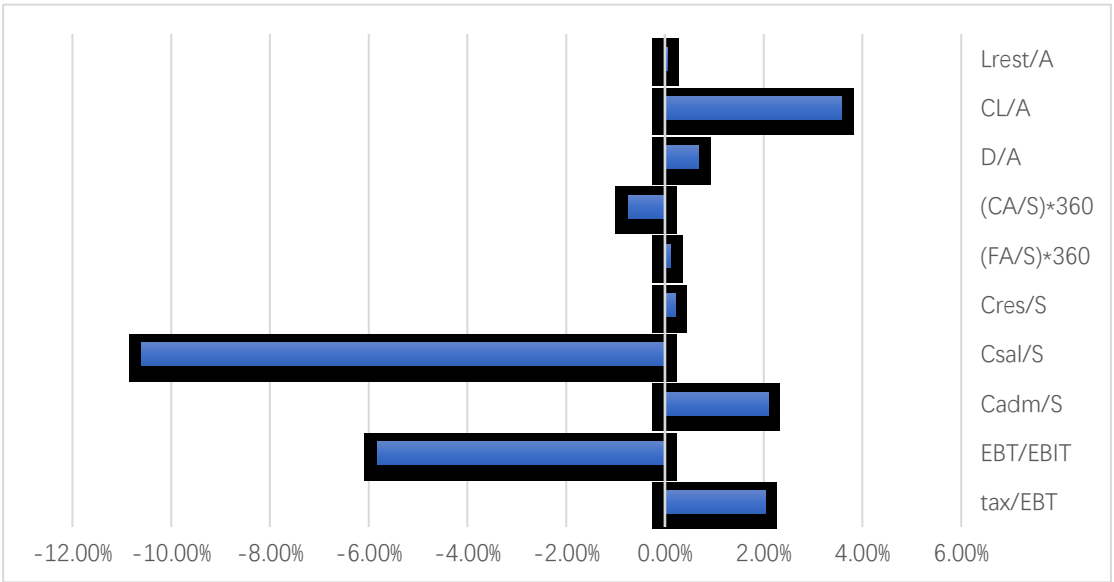
In this chapter, we will introduce the pyramidal decomposition analysis of BMW. Meanwhile, we will use another company, which is Ford, use it as a control, to analyze the performance of BMW in the market horizontally. Pyramidal decomposition is a tool that may help us to avoid misleading conclusions regarding a company's profitability. While it is arrived at through the income statement, the net profit is also used in both the balance sheet and the cash flow statement. The analysis of a company's profitability involves some nuances.

As we all know, return on equity is an important indicator of the profitability of listed companies. Therefore, in this part, we will introduce return on equity ratio and also compare BMW with Ford.

Table 4.10 Pyramidal Decomposition of ROE of Company BMW and Ford in 2013

Indicator	Influence	Influence (+,-)	Order
tax/EBT	2.03%	+	5
EBT/EBIT	-5.83%	-	2
Cadm/S	2.09%	+	4
Csal/S	-10.60%	-	1
Cres/S	0.21%	+	8
(FA/S)*360	0.12%	+	9
(CA/S)*360	-0.74%	-	6
D/A	0.69%	+	7
CL/A	3.58%	+	3
Lrest/A	0.04%	+	10
Σ	-8.407%		

Figure 4.16 Influence of Pyramidal Decomposition of ROE of Company BMW and Ford in 2013



From table 4.10 and figure 4.16, we can see that Csal/S has the most influence on ROE, which approached at negative 10.60% in 2013. And the sum of these 10 components is -8.407%, which is the return on equity ratio in 2013.

In the 2013 data, we can see that there is a total of 7 positive numbers and three negative

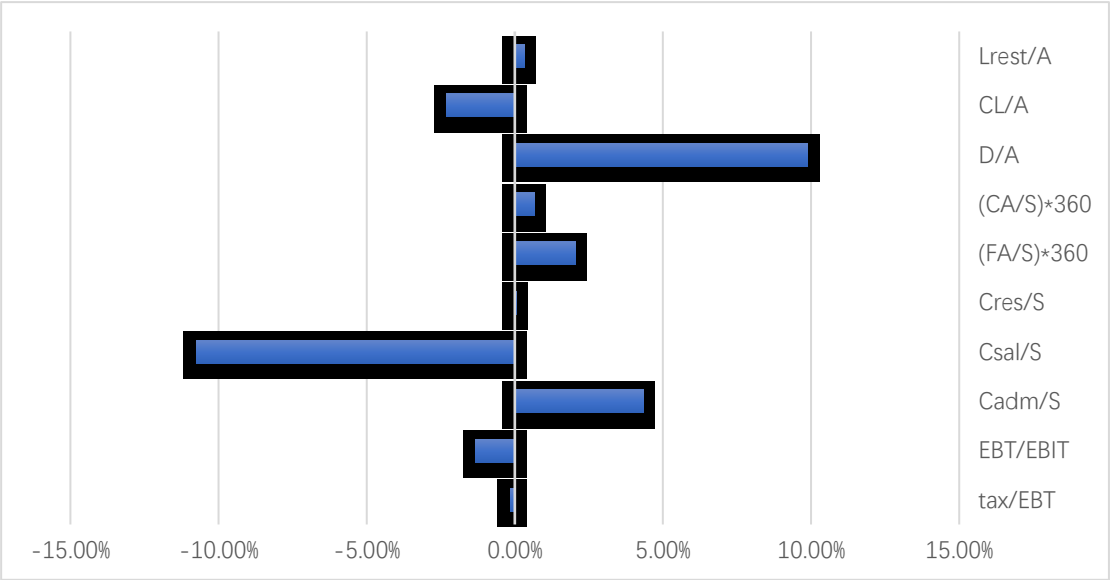
numbers. Undoubtedly, the most influential in negative numbers is Csal/S. In contrast, the most significant impact on ROE in positive numbers is CL/A, which is 3.58%.

If a company wants to operate healthily and normally, I think they need to balance each of these expenses. It is best not to have too much difference.

Table 4.11 Pyramidal Decomposition of ROE of Company BMW and Ford in 2014

Indicator	Influence	Influence (+,-)	Order
tax/EBT	-0.15%	-	9
EBT/EBIT	-1.32%	-	6.
Cadm/S	4.34%	+	3
Csal/S	-10.75%	-	1
Cres/S	0.04%	+	10
(FA/S)*360	2.05%	+	5
(CA/S)*360	0.66%	+	7
D/A	9.88%	+	2
CL/A	-2.30%	-	4
Lrest/A	0.32%	+	8
Σ	2.772%		

Figure 4.17 Influence of Pyramidal Decomposition of ROE of Company BMW and Ford in 2014



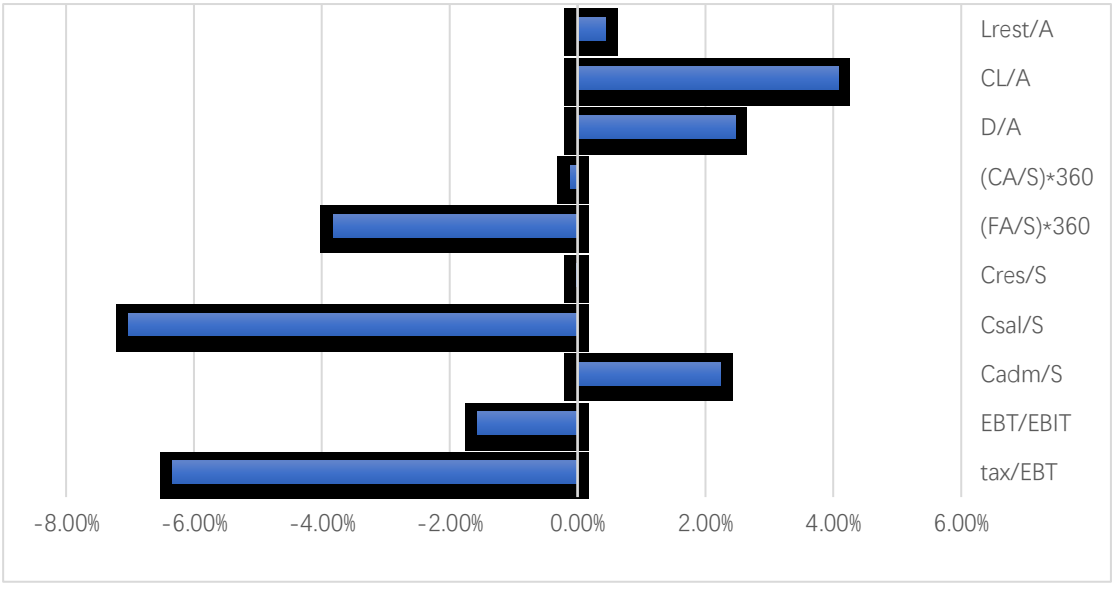
From table 4.11 and figure 4.17, we can see that Csal/S has the most influence on ROE, which approached at negative 10.750% in 2014, which has increased compared to the last year. And the sum of these 10 components is 2.72, which is the return on equity ratio in 2014.

In the 2014 data, we can see that there is a total of six positive numbers and four negative numbers. Undoubtedly, the most influential in negative numbers is Csal/S. In contrast, the most significant impact on ROE in positive numbers is D/A, which is 9.88%.In this year, ROE is sensitive, which is much higher than last year.

Table 4.12 Pyramidal Decomposition of ROE of Company BMW and Ford in 2015

Indicator	Influence	Influence (+,-)	Order
tax/EBT	-6.33%	-	2
EBT/EBIT	-1.56%	-	7
Cadm/S	2.24%	+	6
Csal/S	-7.02%	-	1
Cres/S	-0.01%	-	10
(FA/S)*360	-3.82%	-	4
(CA/S)*360	-0.11%	-	9
D/A	2.46%	+	5
CL/A	4.08%	+	3
Lrest/A	0.44%	+	8.
Σ	-9.639%		

Figure 4.18 Influence of Pyramidal Decomposition of ROE of Company BMW and Ford in 2015



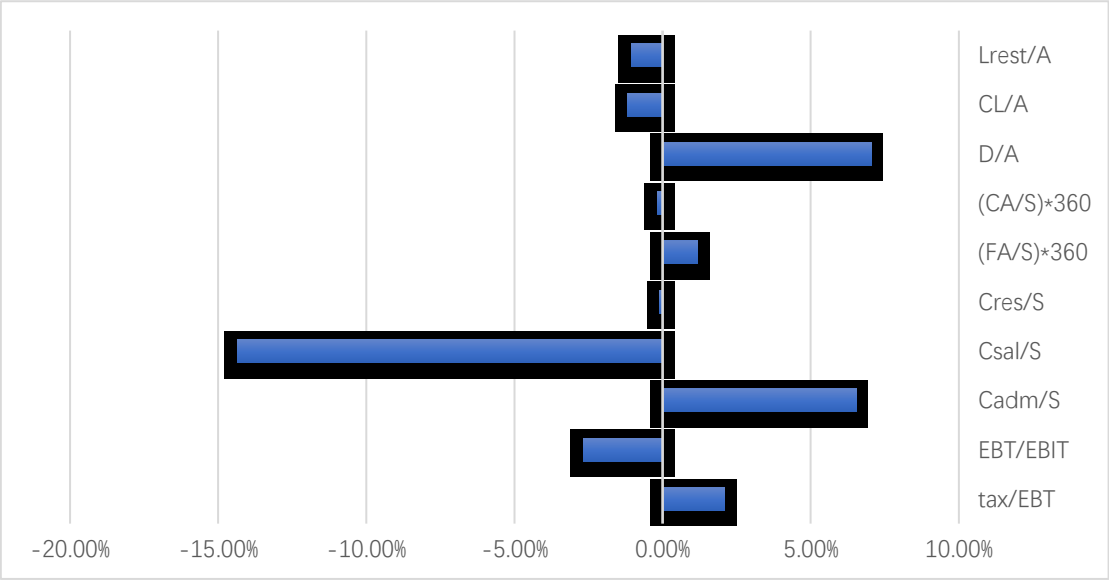
From table 4.12 and figure 4.18, we can see that Csal/S has the most influence on ROE, which approached at negative 7.02% in 2015. And the sum of these 10 components is -9.639%, which is the return on equity ratio in 2015.

In the 2015 data, we can see that there is a total of four positive numbers and six negative numbers. Undoubtedly, the most influential in negative numbers is Csal/S. Meanwhile, the tax/EBT also has great influence on ROE. It shows the government had some changes at the policy of tax. In contrast, the most significant impact on ROE in positive numbers is CL/A, which is 4.08%.

Table 4.13 Pyramidal Decomposition of ROE of Company BMW and Ford in 2016

Indicator	Influence	Influence (+,-)	Order
tax/EBT	2.09%	+	5
EBT/EBIT	-2.67%	-	4
Cadm/S	6.53%	+	3
Csal/S	-14.36%	-	1
Cres/S	-0.11%	-	10
(FA/S)*360	1.19%	+	6
(CA/S)*360	-0.19%	-	9
D/A	7.04%	+	2
CL/A	-1.18%	-	7
Lrest/A	-1.06%	-	8
Σ	-2.700%		

Figure 4.19 Influence of Pyramidal Decomposition of ROE of Company BMW and Ford in 2016



From table 4.13 and figure 4.19, we can see that Csal/S has the most influence on ROE, which approached at negative 14.36% in 2016. And the sum of these 10 components is –2.7%, which is the return on equity ratio in 2016.

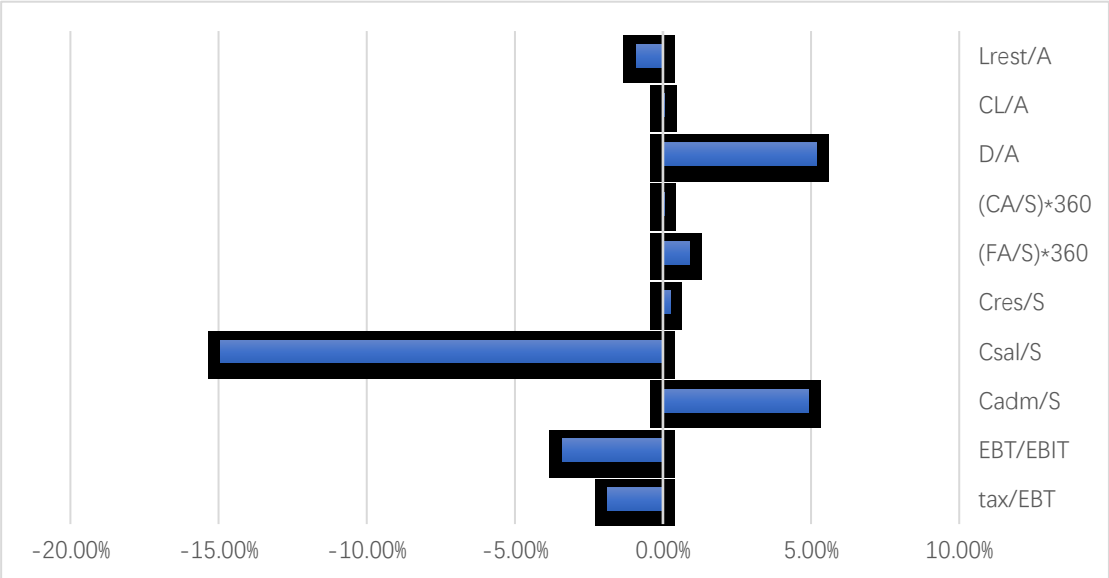
In the 2016 data, we can see that there is a total of three positive numbers and seven negative

numbers. Undoubtedly, the most influential in negative numbers is Csal/S. In contrast, the most significant impact on ROE in positive numbers is D/A, which is 7.04%.

Table 4.14 Pyramidal Decomposition of ROE of Company BMW and Ford in 2017

Indicator	Influence	Influence (+,-)	Order
tax/EBT	-1.86%	-	5
EBT/EBIT	-3.39%	-	4
Cadm/S	4.91%	+	3
Csal/S	-14.92%	-	1
Cres/S	0.24%	+	8
(FA/S)*360	0.91%	+	6
(CA/S)*360	0.05%	+	10
D/A	5.18%	+	2
CL/A	0.06%	+	9
Lrest/A	-0.90%	-	7
Σ	-9.708%		

Figure 4.20 Influence of Pyramidal Decomposition of ROE of Company BMW and Ford in 2017



From table 4.14 and figure 4.20, we can see that Csal/S has the most influence on ROE, which

approached at negative 14.92% in 2017. And the sum of these 10 components is –-9.708%, which is the return on equity ratio in 2017.

In the 2017 data, we can see that there is a total of six positive numbers and four negative numbers. Undoubtedly, the most influential in negative numbers is Csal/S. In contrast, the most significant impact on ROE in positive numbers is D/A, which is 5.18%.

4.4 Sensitivity Analysis

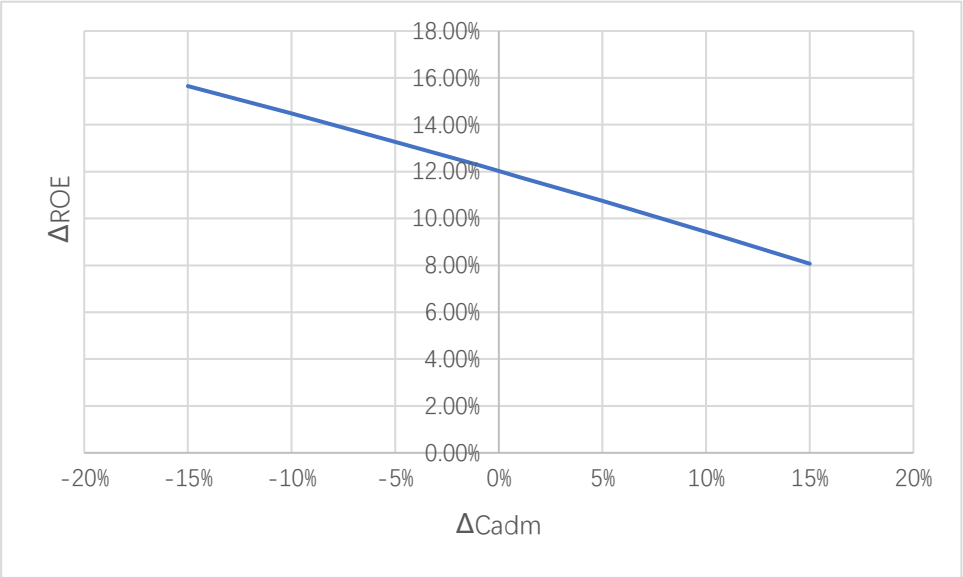
A sensitivity analysis determines how different values of an independent variable affect a particular dependent variable under a given set of assumptions. This technique is used within specific boundaries that depend on one or more input variables, such as the effect that changes in interest rates (independent variable) has on bond prices (dependent variable).

Sensitivity analysis is also referred to as "what-if" or simulation analysis and is a way to predict the outcome of a decision given a certain range of variables. By creating a given set of variables, an analyst can determine how changes in one variable affect the outcome.

Table 4.15 Sensitivity Analysis of Return on Equity

α	Change of administration	ROE after change
15%	17983.7	8.07%
10%	17201.8	9.43%
5%	16419.9	10.75%
1%	15794.4	11.77%
0%	15,638	12.03%
-1%	15481.6	12.28%
-5%	14856.1	13.27%
-10%	14074.2	14.48%
-15%	13292.3	15.65%

Figure 4.21 Sensitivity Analysis of Return on Equity



In this sensitivity analysis, we want to change the cost of administration to analysis its change to influence return on equity. The initial level of return on equity is 12.03% if we suppose cost of equity with no percentage change.

From table 4.15 , we can see if we increase the percentage change, which means improve the amount of cost, the return on equity ratio will be decreased. And vice versa. For example, if we change positive 5% cost, it will be a 16419.9-million-euro cost of administration, return on equity ratio will be decreased to 10.75%.

From figure 4.21, we can see that if we increase the cost of administration, return on equity ratio will goes down. So, we suggest that BMW should improve the efficiency of the use of administrative management costs, avoid excessive administrative costs, so as to better control costs, allow more costs for production or other consumption, can improve ROE ratio.

5. Conclusion

Through the first four parts, we can have a deep understanding of BMW's overall financial situation. And its financial status, BMW is one of the biggest car brands. Now we will draw conclusions paper.

In order to reach the goal of finding ways to help the company improve. The efficiency utilization of assets and their ability to meet long-term liabilities. We are indeed analytical Forms Chapter 2, Chapters 3 and 4.

We got some basic information in the method section, and the financial statements helped us to understand the company's performance and health, we can use these methods to calculate common size analysis, financial ratios, and pyramid decomposition analysis.

From activity ratio, we can compare BMW and Ford. The accounts receivable turnover of BMW is higher than Ford. Accounts receivable turnover is the number of times per year that a business collects its average accounts receivable. The ratio is used to evaluate the ability of a company to efficiently issue credit to its customers and collect funds from them in a timely manner. The data shows BMW has superior management in this term of receivable. And Ford need to collect credit in a timely manner.

From pyramidal decomposition analysis, we compare BMW and Ford’s return on equity for five years. At the side of debt to equity ratio, we give a suggestion to decrease BMW's fixed assets and increase the amount of fixed assets of China Telecom in order to get higher debt to equity ratio.

Through pyramidal decomposition analysis, we can see that indicator Csal/S has the biggest influence on basic ratio return on equity so BMW can focus on these two indicators to help company improve its performance.

For sensitivity analysis, our goal is to find the sensitivity factor we have on impact of many uncertainties on investment projects. We can see if we increase the percentage change, which means improve the amount of cost, the return on equity ratio will be decreased. And vice versa.

So, we suggest that BMW should improve the efficiency of the use of administrative management costs, avoid excessive administrative costs, so as to better control costs, allow more costs for production or other consumption, can improve ROE ratio.

As trade internationalization and advanced technology continue to change, the company's mutual competition has slowly turned into a new trend of governance standards competition. Purchasing continues to receive the attention of the company's top management by virtue of BMW's indispensable position in new corporate governance and value-added activities. Improving procurement management is a key step in the company's value-added activities, which has a great impact on the company's increased key strength.

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List of Abbreviation

A: Assets

E: Equity of shareholders

TAT: Total assets turnover

ATA: average total assets

ACP: Average collection period

D: Total debt

DTE: Debt to equity

IC: Interest coverage

EBIT: Earn before interest and tax

OPM： operating profit margin

NPM： net profit margin

CA： current assets

FA： fixed assets

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Ostrava dated..1..5..2019

XiaohangXu 徐晓航

Student's name and surname

List of Annexes

Annexes 1:Balance sheet of BMW

Assets					
Fiscal year is January-December. All values EUR Millions.	2017	2016	2015	2014	2013
Net Income before Extraordinaries	-	-	-	-	-
Cash & Short-Term Investments	9,039	7,880	6,122	7,688	7,671
Cash Only	9,039	7,880	6,122	7,688	7,671
Short-Term Investments	-	-	-	-	-
Cash & Short-Term Investments Growth	14.71%	28.72%	-20.37%	0.22%	-
Cash & ST Investments / Total Assets	4.44%	3.95%	3.36%	4.97%	5.54%
Total Accounts Receivable	36,346	34,991	34,600	29,080	26,532
Accounts Receivables, Net	34,780	33,053	31,327	26,120	24,476
Accounts Receivables, Gross	34,836	33,110	31,423	26,203	24,582
Bad Debt/Doubtful Accounts	-56	-57	-96	-83	-106
Other Receivables	1,566	1,938	3,273	2,960	2,056
Accounts Receivable Growth	3.87%	1.13%	18.98%	9.60%	-
Accounts Receivable Turnover	2.71	2.69	2.66	2.76	2.87
Inventories	12,707	11,841	11,071	11,089	9,595
Finished Goods	10,436	9,684	8,969	9,227	7,893
Work in Progress	1,125	1,157	1,098	944	851
Raw Materials	1,146	1,000	1,004	918	851
Progress Payments & Other	-	-	-	-	-
Other Current Assets	13,490	12,152	9,985	8,940	8,386
Prepaid Expenses	1,136	1,018	795	674	565
Miscellaneous Current Assets	12,354	11,134	9,190	8,266	7,821
Total Current Assets	**71,582**	**66,864**	**61,778**	**56,797**	**52,184**
Net Property, Plant & Equipment	54,728	55,749	52,724	47,347	41,082
Property, Plant & Equipment - Gross	97,388	97,377	92,357	84,060	75,351

Buildings	11,088	10,940	10,430	9,803	8,721
Land & Improvements	-	-	-	-	-
Machinery & Equipment	36,833	35,924	35,469	32,764	28,842
Construction in Progress	2,525	2,253	1,591	2,014	2,971
Leases	-	-	-	-	-
Computer Software and Equipment	-	-	-	-	-
Leased Property	44,143	45,588	42,266	36,969	32,486
Transportation Equipment	-	-	-	-	-
Other Property, Plant & Equipment	2,799	2,672	2,601	2,510	2,331
Accumulated Depreciation	42,660	41,628	39,633	36,713	34,269
Buildings	4,966	4,786	4,515	4,178	3,831
Land & Improvements	-	-	-	-	-
Machinery & Equipment	27,838	27,092	25,876	23,834	22,071
Construction in Progress	-	-	-	-	-
Leases	7,886	7,799	7,301	6,804	6,572
Computer Software and Equipment	-	-	-	-	-
Leased Property	7,886	7,799	7,301	6,804	6,572
Transportation Equipment	-	-	-	-	-
Other Property, Plant & Equipment	1,970	1,951	1,941	1,897	1,795
Total Investments and Advances	5,826	5,811	2,661	1,496	1,191
LT Investment - Affiliate Companies	3,016	2,854	2,390	1,496	1,191
Other Long-Term Investments	2,810	2,957	271	-	-
Long-Term Note Receivable	48,321	48,032	41,918	37,485	32,616
Intangible Assets	9,464	8,157	7,372	6,499	6,179
Net Goodwill	380	364	364	364	369
Net Other Intangibles	9,084	7,793	7,008	6,135	5,810
Other Assets	13,575	14,810	15,709	5,179	5,125
Deferred Charges	882	896	732	649	509
Tangible Other Assets	753	699	3,044	2,469	2,996

Total Assets	**203,496**	**199,423**	**182,162**	**154,803**	**138,377**
Assets - Total - Growth	2.04%	9.48%	17.67%	11.87%	-
Asset Turnover	0.49	-	-	-	-
Return on Average Assets	4.28%	-	-	-	-
Liabilities & Shareholders' Equity					
All values EUR Millions.	2017	2016	2015	2014	2013
ST Debt & Current Portion LT Debt	40,214	42,326	42,160	35,552	30,428
Short Term Debt	40,214	42,326	26,990	5,599	6,292
Current Portion of Long-Term Debt	-	-	15,170	29,953	24,136
Accounts Payable	9,731	8,512	7,773	7,709	7,485
Accounts Payable Growth	14.32%	9.51%	0.83%	2.99%	-
Income Tax Payable	1,124	1,074	1,441	1,590	2,319
Other Current Liabilities	17,978	16,077	14,217	14,227	10,902
Dividends Payable	-	-	-	-	-
Accrued Payroll	-	-	-	-	-
Miscellaneous Current Liabilities	17,978	16,077	14,217	14,227	10,902
Total Current Liabilities	**69,047**	**67,989**	**65,591**	**59,078**	**51,134**
Total Current Assets FOR CALCULATION PURPOSES ONLY	71,582	66,864	61,778	56,797	52,184
Total Assets FOR CALCULATION PURPOSES ONLY	203,496	199,423	182,162	154,803	138,377
Inventories FOR CALCULATION PURPOSES ONLY	12,707	11,841	11,071	11,089	9,595
Cash & Short-Term Investments FOR CALCULATION PURPOSES ONLY	9,039	7,880	6,122	7,688	7,671
Current Ratio	1.04	0.98	0.94	0.96	1.02
Quick Ratio	0.85	0.81	0.77	0.77	0.83
Cash Ratio	0.13	0.12	0.09	0.13	0.15

Long-Term Debt	52,212	55,405	47,171	41,954	38,773
Long-Term Debt excl. Capitalized Leases	52,212	55,405	47,171	41,954	38,773
Non-Convertible Debt	52,212	55,405	47,171	41,954	38,773
Convertible Debt	-	-	-	-	-
Capitalized Lease Obligations	-	-	-	-	-
Provision for Risks & Charges	8,689	9,626	7,621	8,872	6,131
Deferred Taxes	314	468	171	-87	839
Deferred Taxes - Credit	12,254	13,683	12,104	1,974	2,459
Deferred Taxes - Debit	11,940	13,215	11,933	2,061	1,620
Other Liabilities	6,442	5,005	6,644	5,213	4,107
Deferred Tax Liability-Untaxed Reserves	-	-	-	-	-
Other Liabilities (excl. Deferred Income)	1,877	700	3,056	1,894	1,020
Deferred Income	4,565	4,305	3,588	3,319	3,087
Total Liabilities	**148,644**	**151,708**	**139,131**	**117,091**	**102,604**
Non-Equity Reserves	304	352	267	275	173
Total Liabilities / Total Assets	73.05%	76.07%	76.38%	75.64%	74.15%
Preferred Stock (Carrying Value)	-	-	-	-	-
Redeemable Preferred Stock	-	-	-	-	-
Non-Redeemable Preferred Stock	-	-	-	-	-
Preferred Stock issues for ESOP	-	-	-	-	-
ESOP Guarantees - Preferred Stock	-	-	-	-	-
Common Equity (Total)	54,112	47,108	42,530	37,220	35,412
Common Stock Par/Carry Value	658	657	657	656	656
Additional Paid-In Capital/Capital Surplus	2,084	2,047	2,027	2,005	1,990
Retained Earnings	51,256	44,445	41,027	35,621	33,122

ESOP Debt Guarantee	-	-	-	-	-
Cumulative Translation Adjustment/Unrealized For. Exch. Gain	-1,494	-171	132	-723	-1,627
Unrealized Gain/Loss Marketable Securities	93	52	24	141	135
Revaluation Reserves	-	-	-	-	-
Other Appropriated Reserves	1,515	78	-1,337	-480	1,136
Unappropriated Reserves	-	-	-	-	-
Treasury Stock	-	-	-	-	-
Common Equity / Total Assets	26.59%	23.62%	23.35%	24.04%	25.59%
Total Shareholders' Equity	**54,852**	**47,715**	**43,031**	**37,712**	**35,773**
Total Shareholders' Equity / Total Assets	26.59%	23.62%	23.35%	24.04%	25.59%
Accumulated Minority Interest	436	255	234	217	188
Total Equity	**54,548**	**47,363**	**42,764**	**37,437**	**35,600**
Liabilities & Shareholders' Equity	203,496	199,423	182,162	154,803	138,377

Annex2:Income statement of BMW

Fiscal year is January-December. All values EUR Millions.	2017	2016	2015	2014	2013
Revenue	**98,678**	**94,163**	**92,175**	**80,401**	**76,059**
Sales Growth	4.79%	2.16%	14.64%	5.71%	-
Cost of Goods Sold (COGS) incl. D&A	**73,824**	**71,148**	**69,772**	**59,261**	**56,673**
COGS excluding D&A	65,369	63,036	61,577	51,690	49,717
Depreciation & Amortization Expense	8,455	8,112	8,195	7,571	6,956
Depreciation	7,028	6,709	6,854	6,325	5,709
Amortization of Intangibles	1,427	1,403	1,341	1,246	1,247
Amortization of Deferred Charges	-	-	-	-	-
COGS Growth	3.76%	1.97%	17.74%	4.57%	-
Gross Income	24,854	23,015	22,403	21,140	19,386
Gross Income Growth	7.99%	2.73%	5.97%	9.05%	-
Gross Profit Margin	25.19%	-	-	-	-
SG&A Expense	15,638	15,673	14,519	13,690	12,858
Research & Development	6,108	5,164	5,169	4,566	4,793
Another SG&A	8,393	8,265	7,784	7,517	6,606
SGA Growth	7.98%	3.67%	7.20%	6.00%	-
Other Operating Expense	442	188	238	243	304
EBIT	9,911	9,398	9,212	8,814	8197
Unusual Expense	-234	-118	455	750	216
Non-Operating Income/Expense	-164	-161	187	113	162
Non-Operating Interest Income	201	196	185	201	187
Equity in Affiliates (Pretax)	738	441	518	655	407
Interest Expense	265	327	423	326	330
Interest Expense Growth	-18.96%	-22.70%	29.75%	-1.21%	-
Gross Interest Expense	265	327	423	326	330

Interest Capitalized	-	-	-	-	-
Pretax Income	10,655	9,665	9,224	8,707	7,893
Pretax Income Growth	10.24%	4.78%	5.94%	10.31%	-
Pretax Margin	10.80%	-	-	-	-
Income Tax	1,949	2,755	2,828	2,890	2,564
Income Tax - Current Domestic	2,558	2,670	2,751	2,774	2,581
Income Tax - Current Foreign	-	-	-	-	-
Income Tax - Deferred Domestic	-609	85	77	116	-17
Income Tax - Deferred Foreign	-	-	-	-	-
Income Tax Credits	-	-	-	-	-
Equity in Affiliates	-	-	-	-	-
Other After-Tax Income (Expense)	-	-	-	-	-
Consolidated Net Income	8,706	6,910	6,396	5,817	5,329
Minority Interest Expense	86	47	27	19	26
Net Income	8,620	6,863	6,369	5,798	5,303
Net Income Growth	25.60%	7.76%	9.85%	9.33%	-
Net Margin	8.74%	-	-	-	-
Extraordinaires & Discontinued Operations	-	-	-	-	-
Extra Items & Gain/Loss Sale of Assets	-	-	-	-	-
Cumulative Effect - Accounting Chg.	-	-	-	-	-
Discontinued Operations	-	-	-	-	-
Net Income After Extraordinaires	8,620	6,863	6,369	5,798	5,303
Preferred Dividends	-	-	-	-	1
Net Income Available to Common	8,620	6,863	6,369	5,798	5,302
EPS (Basic)	13.12	10.45	9.7	8.83	8.08
EPS (Basic) Growth	25.55%	7.73%	9.85%	9.28%	-
Basic Shares Outstanding	657	657	656	656	656
EPS (Diluted)	13.12	10.45	9.7	8.83	8.08

EPS (Diluted) Growth	25.54%	7.71%	9.81%	9.29%	-
Diluted Shares Outstanding	657	657	656	656	656
EBITDA	18,366	17,510	17,407	16,385	14,639
EBITDA Growth	4.89%	0.59%	6.24%	11.93%	-
EBITDA Margin	18.61%	-	-	-	-
EBIT	9,911	9,398	9,212	8,814	8,197

Annex3:Cash flow of BMW

Fiscal year is January-December. All values EUR Millions.	2017	2016	2015	2014	2013
Net Income before Extraordinaires	8,506	6,821	5,175	7,293	5,774
Net Income Growth	25.99%	8.04%	9.95%	9.16%	-
Depreciation, Depletion & Amortization	4,822	4,806	4,659	4,170	3,741
Depreciation and Depletion	3,395	3,403	3,318	2,924	2,494
Amortization of Intangible Assets	1427	1403	1341	1246	1,247
Deferred Taxes & Investment Tax Credit	-609	85	77	116	-17
Deferred Taxes	-609	85	77	116	-17
Investment Tax Credit	-	-	-	-	-
Other Funds	-8,626	-9,871	-10,693	-7,096	-7,003
Funds from Operations	4,293	1,930	439	3,007	2,050
Extraordinaires	-	-	-	-	-
Changes in Working Capital	1,451	1,125	257	-228	1,955
Receivables	45	-93	-566	379	22
Inventories	-1,293	-749	298	-971	-195
Accounts Payable	1,414	738	-25	41	1,159
Income Taxes Payable	-	-	-	-	-

Other Accruals	-	-	-	-	-
Other Assets/Liabilities	1,285	1,229	550	323	969
Net Operating Cash Flow	5,744	3,055	696	2,779	4,005
Net Operating Cash Flow Growth	88.02%	338.94%	-74.96%	-30.61%	-
Net Operating Cash Flow / Sales	0	0	0.76%	0	0